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Harold S. Buttenheim.....*Editor*
Alden W. Welch..*Sec'y, Research Editor*
William S. Foster....*Engineering Editor*
Grace B. Foster
Carol W. Hightower *Associate Editors*
Carl Eric Carlson

Edgar J. Buttenheim.....*President*
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THE MUNICIPAL INDEX AND ATLAS, used in connection with the current advertisements in THE AMERICAN CITY, places local officials in the most favorable position to obtain all types of available equipment and supplies from manufacturers who desire to serve municipal government departments. THE MUNICIPAL INDEX AND ATLAS (750 pages) is published annually by the AMERICAN CITY MAGAZINE CORPORATION, 470 Fourth Avenue, New York 16, N. Y.

See pp. 19, 21, 23, 24, 26, 28, 121, 123, 125, 127 for catalogs and publications on municipal and civic subjects

List of coming conventions on page 129. For Index to Advertisements see page 170

How much does the telephone company earn?

We asked a number of people this question . . . *"How much would you say the telephone company makes (after all expenses and taxes) on the money invested in the business?"*

Twelve per cent said "6% or less."
Eleven per cent said "7% to 10%."
Twelve per cent said "15%, 20% or 25%."
Eight per cent said "30% or more."
Fifty-seven per cent had no opinion.

The actual figure is less than many people think. Even with telephone calls at a record peak, Bell System earnings on the money invested in the business have averaged only a shade over 5½% for the last five years — including the war years. And that's not enough to insure good telephone service.

We thought you might like to know in case you have been wondering about telephone earnings.

BELL TELEPHONE SYSTEM

Our Municipal Notebook

Are Cities Going Bankrupt?

THE *United States News* asks this question in its February 14 issue and then answers it by implying that they are, not only because of rising costs but also because of increased services that are demanded of them, and the fact that many of the taxpayers are moving beyond the city limits. It points out the well-known fact that the property tax is badly over-burdened when it comes to carrying the financial load of these municipal services.

The problem might not be so difficult if these new services were put on a self-supporting basis so that those who used them would pay for them. Making the sewer service charge as part of the water bill and having that charge great enough to pay for all sewerage expenses, both capitalized and operating, would lift one burden from the property tax. Using parking meters would provide a means for insuring that those who use the streets would contribute to their upkeep. A service charge for garbage and refuse collection also would help lift the load. Well-planned concessions in connection with recreational areas give another outlet.

As one city manager said, his city recognizes its responsibility to serve its surrounding area—and also its right to expect support from this same area. Good management will go a long way towards solving these problems.

Newspaper Cooperation Helps Solve Local Problems

THIS issue of THE AMERICAN CITY contains one example, that of York, Pa. (page 74), which demonstrates the leading role a newspaper can play in helping to foster community development by campaigning for increased public support and understanding of municipal problems.

Another notable instance where a newspaper is pushing for municipal action and metropolitan area reforms is to be found in Wisconsin, where *The Milwaukee Journal* has launched a vigorous program for re-awakening the city. An ingenious cartoon, "Turn Me Over in '47," is used at the head of first-page editorials which deal with Milwaukee municipal matters. No punches are pulled in this editorial series, which thus far has dealt with such subjects as the deleterious effects upon the Milwaukee area as a whole of the multiplicity of small taxing units in the county; general city planning and housing problems, and the necessity for issuing bonds for a program of public improvements.

Turn me over in '47.

Although Milwaukee has a non-partisan city government, the matter of a bond issue is a sore point because Milwaukee has taken great pride in the fact that it is one of the few debt-free cities in the country. Last month, however, the aldermen voted to submit to the people at the April election the question of whether the city should issue public improvement bonds.

The Milwaukee Journal has pointed out that the city actually is not debt-free. One editorial stated:

> When you fail to keep up your plant or make public improvements that are becoming necessary, you are borrowing against the future as surely as if you floated bonds or went out and negotiated a cash loan. . . . A city run down to the point where its very existence is threatened is not debt-free even though it may not owe a dollar. It has mortgaged its future and it has to meet that mortgage.

There has been a trend toward increased understanding by the country's press of local administrative problems. The calibre of newspaper reporting and editorials on local affairs seems to have improved greatly. It need hardly be pointed out that newspapers have a large stake in the orderly development and growth of the communities in which they are located. It seems inevitable that municipal-newspaper cooperation must be continued and extended in the future.

Guides to State Services Help Local Communities

TOO OFTEN municipalities have overlooked the number and variety of state services and facilities available within their own state boundaries. Two states have issued recent reports of considerable aid in enabling interested citizens and local officials to know what assistance state governments can offer.

A Guide to State Services, published by the New York State Department of Commerce, lists briefly and indexes fully the many services available to communities, their officials, and their organizations and agencies, public and private, through the several departments and commissions of the state government. The booklet, containing 90 pages of descriptive listings, along with addresses and sources of information, was an important outgrowth of a meeting of the New York State Citizens Council, which brought together both citizens and public officials for a discussion of community needs. Suggestions from the group resulted in the preparation of the *Guide* by state officials.

Tennessee is also making information more readily available to communities. The Tennessee State Planning Commission has issued a *Directory of State Agencies in Nashville*, as well as another report, *Tennessee Is Making Plans*, which describes the work of the commission in doing research on state resources, aiding in industrial development and community service programs, and providing local planning assistance to Tennessee communities.

Such guides to the resources of state agencies furnish local officials and interested citizens with valuable tools for making better use of their state government services.

Magazine for Citizens

DESIGNED to awaken citizen interest in the many plans and activities of local government, a new monthly magazine, *Citizen*, has appeared on the British scene. The articles in this "journal of civic affairs" describe and explain such local government functions as street lighting, district heating, schools, health services, city planning, and housing. One article each month is

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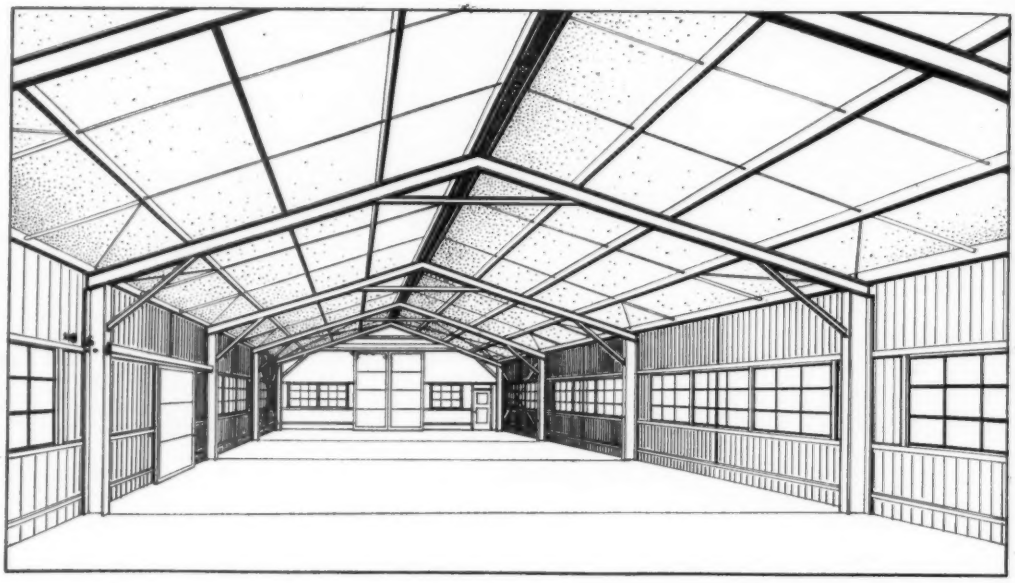

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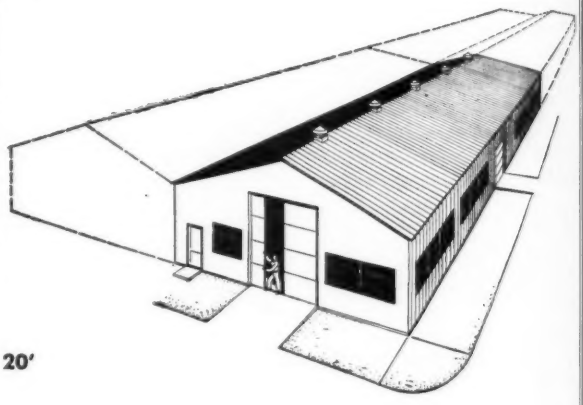

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devoted to the characteristics of a British city. These articles discuss briefly each city's past history, major facilities, services, and industrial developments. A four-page monthly roundup highlights the main municipal occurrences of interest to citizens in various sections of the British Isles.

Typical features include items such as an interview with a British Broadcasting Corporation executive to find out how the radio is helping the ordinary man to understand and to be interested in his place in the community. Another typical article is entitled "An Intelligent Woman's Guide to Housing," and describes how the government housing program fits in with traditional notions of individual home planning.

The purposes of this new British magazine are to explain local government activities and to secure citizen interest and participation in local democracy—a purpose to be commended.

That such an undertaking can also be a success is evidenced by the fact that the first issues of the magazine were sold out within a very short time, and paper limitations allow the publishers to satisfy only a part of a great public demand. It is to be hoped that some enterprising firm or individual will launch a similar venture in this country.

New Orleans Strike Experience in Retrospect

THE thoughtful and painstaking analysis of the New Orleans refuse collection program (see page 82 of this issue) would not be complete without some discussion of the annoying strike of garbage and refuse workers that the city faced a few months ago and the direct, energetic way that it was overcome.

The strike originated over a demand for extra pay for those days in which trash is supposed to be collected along with the garbage. Col. Harold P. Nathan, heading up the sanitation department, recognized that inequities existed in the system, and it was just for that reason that he instituted the study made by Professor Frank MacDonald to learn where they lay and how they could be corrected. The so-called "trash days" constituted only one of these inequities. Differing lengths of routes was another, perhaps more important factor; inefficient and antiquated types of equipment was still another. They were all points that Col. Nathan could not be expected to clear up overnight—points that he had inherited only a few short months before when he was made Commissioner by New Orleans' brisk, businesslike reform mayor, "Shep" Morrison.

The way that Mayor Morrison handled the strike, however, shows an uncompromising directness that can be matched by the support his city gave him. His assertion that the city employes had no right to strike against their government was easily understood. And the response to his request for assistance from the New Orleans business and civic groups gave heartening evidence that they stood back of him.

Mayor Morrison had good precedent for his statement. The classic declaration on this subject, of course, is that made by Calvin Coolidge—and that eventually landed him in the White House. When dealing with a strike of the Boston police force he said, "There is no right to strike against the public safety by anybody, anywhere, at any time," and it requires no stretch of the imagination to term uncollected garbage a transgression of public safety.

New Orleans' Mayor could draw also on the blunt statement of Franklin D. Roosevelt, who said that "a strike of public employes manifests nothing less than an intent on their part to obstruct the operation of the government until the demands are satisfied. Such action, looking toward the paralysis of government by those who have sworn to support it, is unthinkable and intolerable."

He could also call on the National War Labor Board ruling that " . . . . strikes of governmental employes cannot be countenanced if we are to preserve a government by law administered by representatives of the people."

But the most important was the fact that when Mayor Morrison asked for volunteers to help him collect the garbage, businessmen and members of civic groups stepped forward to fill the places left empty by the strikers. Thus he had not only the law behind him, but also the people themselves.

All this points to that old civic axiom that the people in a city get the sort of service that *they* insist upon. Contrast this with Pittsburgh where, despite a crippling power strike, citizens remained so apathetic that they preferred to go to a football game rather than to a mass meeting to see what could be done about restoring service.

Very evidently New Orleans knew what it was doing when it elected its young reform mayor and, despite this city's reputation for gaiety and pleasure, intends to back him.

No Public Funds for Industry

SUBSIDIZING industry by public funds is both unconstitutional and unsound in Tennessee, according to a report, *Subsidies for Industries in Tennessee*, released on February 11 by the Tennessee State Planning Commission. Industrial development corporations which use private funds for investment represent a sounder method of encouraging new industries, the report asserts.

During the past ten years, the General Assembly passed fifty-seven acts authorizing the use of public funds to provide special inducements to industries. These enactments authorized the issuance of almost $3,000,000 in bonds, more than four times the amount authorized in the previous ten years, 1923-33. Furthermore, many communities have incurred incalculable revenue losses in tax concessions granted to various industries.

The Commission makes no recommendations for legislation. The report concludes, however, that acts to authorize communities to use public funds or credit for subsidies should be discontinued, and that if it is deemed advisable to permit such practices, the Constitution should be amended to make them legal and provide for supervision.

A Timely Discussion of Revenue Bonds

A Guest Editorial

THE need for additional revenues for American cities was never more urgent than it is today, when schools, highways, and public utilities whose construction was deferred by the war must be built at much higher costs than in 1940, and when the rise in living costs is bringing pressure for increases in municipal salaries. Real estate is already bearing the chief burden of municipal taxes, and the imposition of still heavier levies on it will increase the cost of housing to small home owners and tenants alike.

Harry L. Severson's excellent analysis of revenue bonds (page 69) is, therefore, most timely, because it is more necessary than ever before that the cost of certain types of municipal services be paid for by the users instead of being added to the general tax bill. Mr. Severson points out, however, that this attractive source of revenue should be confined to types of services capable of producing a steady flow of income. Mr. Severson emphasizes the importance of formulating a master plan for the development of an urban community as a prerequisite for deciding what public works are most necessary for the community and for determining their location, so that they will contribute to the most efficient operation of the city. This suggestion should receive the hearty support of public officials and city planners.

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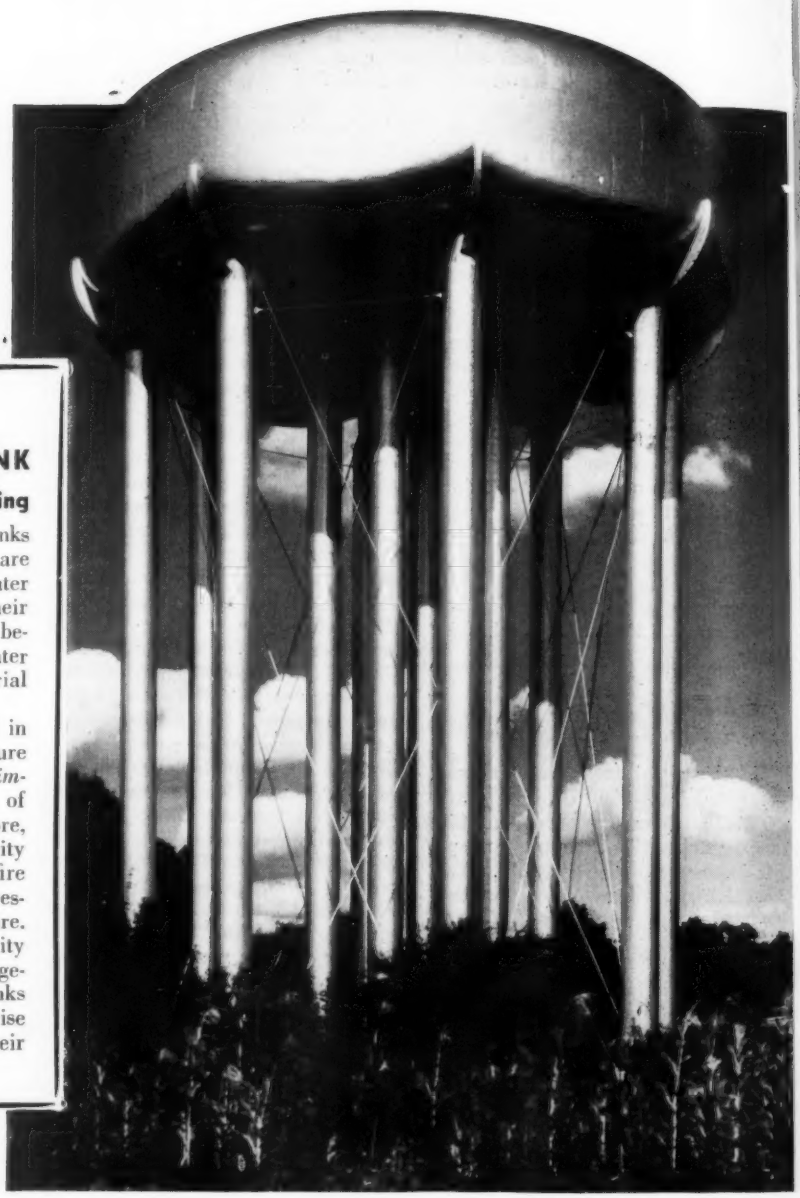

HORTON WELDED ELEVATED WATER TANK

. . . a monument to wise planning

Large-capacity elevated water tanks like the one shown at the right, are an outstanding symbol of *good* water service in many municipalities. Their installation generally marks the beginning of improved municipal water service for domestic and industrial uses alike.

An adequate water supply held in an elevated tank can reduce pressure variations and, in many cases, *improve* pressures in outlying areas of a distribution system. Furthermore, this type of storage provides a city with a ready reserve of water for fire protection. It can also maintain pressure during temporary power failure. To waterworks engineers and city officials who recommend these large-capacity elevated water storage tanks go a well-earned reputation for wise and far-sighted planning for their communities.

The Department of Public Utilities at Richmond, Virginia has installed two 1,000,000-gal. Horton elevated tanks. The one shown here is 97 ft. to bottom and has a range in head of 25 ft. The other tank is 77 ft. 6 in. to bottom and has a range in head of 35 ft.

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Chicago 4.....2127 McCormick Bldg.
San Francisco 11.....1233-22 Battery St. Bldg.
Philadelphia 3.....1616-1700 Walnut St. Bldg.
Atlanta 3.....2114 Healey Bldg.
Havana.....402 Abreu Bldg.
Detroit 26.....1501 Lafayette Bldg.

Plants in BIRMINGHAM, CHICAGO and GREENVILLE, PENNSYLVANIA

Water Supply and Treatment

What Water Works Operations Cost

A STUDY of the figures on the cost of water works operations presented by Kenneth V. Hill, of Greeley and Hanson, Consulting Engineers, Chicago, Ill., before the Wisconsin section of the American Water Works Association shows how good design, coupled with careful selection of the water supply, will cut markedly the cost of water works operation.

A comparison of costs from three separate plants drawing water from the Great Lakes showed that one small plant, by special attention to adequate overhead storage, is able to put its plant operation on an eight-hour schedule and reduce its operating costs to slightly over $7.00 per million gallons. Of this amount, 46½% covered the cost of chemicals and 53½% covered personnel, maintenance, repair, and other expenses. The plant's average demand is less than 0.75 mgd. Another plant with a demand of more than 4 mgd has an average operating expense of $11.85 per mgd while drawing water from the same source. Still another plant, with an average demand of slightly more than 2 mgd, spends $22.60 per mg for operation.

Among larger plants, one with an average demand of 30 mgd capitalizes on an exceptionally well-placed intake that makes it possible to furnish a water of low turbidity requiring a limited quantity of chemicals for coagulation. Its operating costs average only $4.50 per mg. A second plant, with almost twice the demand, spends $9.60 for operation. In the first case, the chemicals amounted to 17% of the operating cost, while in the second they amounted to 34%. The latter plant is handicapped because its intake is located in shallow water and is subject, under some wind conditions, to river pollution.

In general, Mr. Hill found that the cost of operating treatment plants using impounding reservoirs was roughly equal to that of plants using the Great Lakes. Similarly, he found that the cost of using river water is somewhat higher because of its varying quality.

Honolulu Raises Rates

THE Honolulu Board of Water Supply has just boosted its water rates for an average increment of roughly 30%. Frederick Ohrt, manager and chief engineer, states that the additional income will enable the board to meet higher operating costs prevalent today and render a higher quality of service. It will also make it possible to accelerate maintenance work deferred by war activities and to proceed with needed new construction.

The rate schedule was adopted after the public hearing required by law, with acceptance by the public. The following is a comparison between the new monthly rates and the old:

GENERAL USE

	Old	New
⅝-inch meter	$0.50	$0.75
¾ " "	0.75	1.00
1 " "	1.00	1.50
1½ " "	1.50	3.00
2 " "	2.50	5.00
3 " "	5.00	10.00
4 " "	7.50	15.00
6 " "	15.00	30.00
8 " "	25.00	50.00
10 " "	45.00	70.00
12 " "	75.00	100.00

In addition, there is a charge for all water drawn, as follows:

	Old	New
First 25,000 gallons.....	18c	24c/M
Next 225,000 gallons.....	14c	18c/M
Next 1,000,000 gallons....	10c	12c/M
All over	8c	10c/M

All automatic sprinkler rates have been doubled except for the large sizes. A shipping rate of 50 cents per thousand gallons has been maintained without change.

Baytown, Texas, Completes Water, Sewer Improvements

BAYTOWN, TEXAS, is in the process of completing water and sewer improvements that will include water line extensions to serve approximately three hundred additional residences and businesses, sanitary sewers to serve approximately two hundred additional residences, construction of a new 15-inch vitrified clay pipe sanitary sewer outfall line, and the building of a new sewage treatment plant, consisting of a primary settling tank and a sludge digester with floating cover.

Plans are now in preparation for the development of a new water supply, which will consist of a 750-gpm well with a deep-well turbine pump, a 250-000-gallon concrete surface storage reservoir, and a pump house with three horizontal centrifugal booster pumps. A new 8-inch connecting main from the pumping station to the elevated tank also is planned.

The new sewage treatment plant will utilize a PFT Downes type floating cover, with gas-collecting dome and waste gas burner. For sludge handling, it will use American Well Works sludge collectors, skimmers, and sludge pumps. Plans also are in preparation for secondary treatment, which will consist of contact aeration of the Hays process type and final settling facilities.

W. H. Fortney is president of the Water Control and Improvement District that owns and operates the water system and sanitary sewer district. Plans and specifications for the improvements are being prepared in the office of Joseph J. Rady, Consulting Engineer, Ft. Worth, Texas. R. M. Jennings, of the Joseph J. Rady office, is acting as resident engineer.

Savings from Cement-Lined Pipes

YOU get these savings when you use cement-lined cast iron pipe in your water distribution system:

1. Eliminate tuberculation
2. Cut pumping costs because of higher "C" values
3. Use smaller diameter pipe since the flow coefficient remains constantly high
4. Mitigate tastes, odors, and red water troubles with certain types of waters.

These points were emphasized by Thomas Wolfe, Research Engineer, Cast Iron Pipe Research Association, in talks before the New England Water Works Association and the Indiana Section meeting of the American Water Works Association. There is no need to fear that the cement lining will be damaged by tapping the pipe. Modern cement lining adheres to the wall of the pipe and is not injured by cutting or tapping.

Of most significance to water works men is the way that flow coefficients remain high in cement-lined pipe. The following table shows some results of tests on pipe, many of which are located in areas with tuberculating water:

Area	Size	Age	Coefficient
Concord, N. H.....	12"	11 yrs.	145
Concord, N. H.....	14"	new	150
Watertown, N. Y.....	10"	14 yrs.	150
Dedham, Mass.	8"	10 yrs.	142
Manchester, N. H.....	12"	5 yrs.	142
Champaign, Ill.	16"	13 yrs.	140
Birmingham, Ala.	12"	15 yrs.	135
West Palm Beach, Fla...	12"	15 yrs.	142
Charleston, S. C.....	12"	15 yrs.	145
Lincoln, Nebr. (tar coated)	36"	12 yrs.	132
Hammond, Ind. (tar coated)	24"	25 yrs.	121
Corpus Christi, Tex. (tar coated)	20"	29 yrs.	102

WHEN SHALL WE 3 MEET AGAIN?

3 Die in Rail-Crossing Tragedy

WRECKAGE OF THE SUNDAY SCHOOL BUS IN WHICH THREE DIED

Free Press Photo

Train Plows into Sunday School Bus

Pastor, Pupils Killed; Five Others Injured

A Baptist pastor and two of his Sunday-school pupils were killed when an inbound ~~Grand Trunk~~ Penn passenger train plowed into a church bus at the Nevada crossing.

Four other children and a church deacon were injured.

It was the fifth accident in five years at the crossing, which has no bell, light signal or watchman, Traffic Director James M. Lupton said.

* * *

KILLED were:

THE REV. JAMES PATTON, 39, pastor of the Carmel Baptist Church, Carmel and Woodward.

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CERTIFICATE OF MERIT for Safety AWARDED TO WESTERN RAILROAD SUPPLY CO. BY THE NEW YORK MUSEUM OF SCIENCE AND INDUSTRY

Evaluating Federal Aid in the City Street Program

HERE are some points setting forth the responsibilities of federal, state and local governmental agencies in the 1944 Federal Aid Act. They were brought out by Hal H. Hale, executive secretary, American Association of State Highway Officials, in a paper delivered recently before the American Municipal Association in Chicago.

To what extent do cities participate in the 1944 Federal Aid Act?

The act sets aside 25% of the total appropriation of $500,000,000 each year for a three-year period for projects to be built within cities with more than 5,000 population — such projects to be restricted to federal aid routes.

How will these federal-aid routes be designated? The act sets up a new interstate system that will not exceed 40,000 miles and which will connect the principal metropolitan areas, cities and industrial areas. It will also include such circumferential and distribution routes which may be considered necessary for conducting through traffic around the city and city-bound traffic to various parts of the city.

Will such a program mean the loss of rights by the local government? Both the Public Roads Administration and the State Highway Departments have long believed that retention of the highway function by the state and local governments is necessary, and that joint participation in one way or another is the best solution. Since the future will see a growing number of state-municipal highway projects, it is imperative that sound, workable operating relations be established that will parallel and even surpass relations between state and federal levels.

Is the machinery available for intergovernmental cooperation at state and local levels? These are available or are being developed. Significant among them are a general revision of state laws permitting desirable enlargement of state authority to cooperate with cities in a way heretofore not permitted; legal changes in highway financing in urban areas permitting wider state participation; specific legislation authorizing highway department cooperation; joint participation in advance planning, and legislative and administrative implementation by creating special departments or units in the highway departments to deal specifically with street problems in urban areas.

What opposition can one expect to this program? There is opposition to the program. It centers around general criticism that it is woefully inadequate; that it will have little if any effect on the city street problems; that it will mean an end to cities' financial independence and lead to closer state and federal domination; and that state highway departments are oblivious to municipal needs and are unwilling to do anything about them. These arguments have been advanced since the first Federal Aid Act in 1916, and the scene has simply shifted from the federal-state level to the state-local level. Experience fails to show any evidence whatever that a state has surrendered financial independence or sovereignty to federal government. Likewise, cities are even less apt to succumb to the purported threat of domination by the states.

Many Uses for Earth-Moving Equipment

Heavy earth-moving equipment at Davis City, Ariz., has been used to construct streets, level off building lots, and excavate for a sewage disposal plant for a new town to house Davis Dam project workers.

Spot Treating Saves Maintenance Cost

BY spot treating nearly two-thirds of his streets and applying a single seal coat over this, George Kling, Superintendent of Streets and Highways, Union Township, N. J., was able to bring his cost of surface treating down approximately 25%. The spot treatment and single surfacing replaced two surface treatments applied in years previous.

In 1945 Mr. Kling spent slightly less than 5 cents a square yard for surface treating. In 1946 he reduced this to 3¾ cents.

Oil-Mat "Throughway"

THE big metropolitan centers aren't the only cities to sport new, smooth, express throughways. Soda Springs, Idaho, has one that serves adequately. It consists of a 24-foot roadway built of a 2½-inch oil mat and laid on an 86-foot base that is also of a 2-inch oil mat. The street follows the route of U. S. #30 as it passes through town. It has the distinction of being the widest oiled street in Idaho.

Soda Springs is the second oldest city in Idaho and has the only mechanically operated "man-made" geyser in the world. Mayor S. E. Matthews has been in charge of municipal affairs in Soda Springs since 1931.

Work on Soda Springs "throughway."

For Tomorrow's Civic Plans,

Today's Civic Needs—

Convenient Ryerson Steel Service

Twelve strategically located Ryerson plants bring quick service on steel from stock within easy reach of municipalities the country over.

Bars, shafting, structurals, plates, tubing, reinforcing bars, wire mesh, alloys, stainless—every steel product obtainable under present conditions is ready for prompt shipment from the Ryerson plant nearby.

These diversified stocks are a real aid to civic efficiency. One call, one order, one invoice takes care of an entire group of diversified needs slashing detail work for purchasing men. Prompt Ryerson delivery eliminates lost time on the job.

If sometimes you have a question on steel selection or application, here's another advantage of Ryerson service. Each plant has a staff of engineers and metallurgists whose wide experience is always available to you.

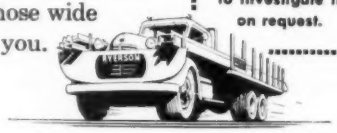
So if you are planning for the future include Ryerson steel service in your plans. And call Ryerson for today's maintenance and repair needs. In the face of present shortages, our stocks are not always complete but we will do everything in our power to work with you.

Joseph T. Ryerson & Son, Inc. Steel-Service Plants at: Chicago, Milwaukee, Detroit, St. Louis, Cincinnati, Cleveland, Pittsburgh, Philadelphia, Buffalo, New York, Boston, Los Angeles.

HI-BOND* RE-BARS

Scientific design provides Hi-Bond reinforcing bars with greater mechanical grip. Gives increased bonding value. Reduces cracking of concrete. Ryerson plants in Chicago, Detroit and Cincinnati regularly stock Hi-Bond rounds in sizes from ⅜ to 1.53 inches (1-¼" square equivalent). Today, all sizes are not always in stock but we urge you to investigate the many advantages of Hi-Bond. Bulletin on request.

*REG. U.S. PAT. OFF.



RYERSON STEEL

Airports and Aviation

Double Your Airport Revenue

MOST municipalities are passing up a good opportunity to realize increased revenues from their airports, according to Leigh Fisher, Detroit airport consultant, in an address delivered recently before a meeting of the American Municipal Association at the Congress Hotel, Chicago, Ill. Mr. Fisher advised municipal officials to give more attention to providing revenue-producing facilities at airports, saying that most airports today would more than double their incomes, if they would construct facilities where people can spend money.

"The construction of earning-power facilities must be planned along with the planning of the airfield itself, to provide the balanced operation which is financially justifiable," Mr. Fisher added. "High revenue return cannot be expected without providing facilities in which or on which people spend money."

The importance of location of the airport, together with its fund-raising facilities and management, were cited by Fisher as principal considerations in providing a practically financed airport. With respect to management, Fisher warned that a basic fault of present-day airport planning is the failure to call in airport managers to determine what facilities are required and to establish the conditions under which they should be built.

"The excessive charges which have been levied on airplane users have been forced by the fact that management has not had an opportunity to develop these other sources of revenue," he said.

Mr. Fisher listed five points for consideration in airport planning:

1. The airport should be adequate to serve the public convenience, necessity, and interest for the area.
2. The airport should attract new commerce, industry, trade, and economic wealth to the area.
3. The airport should assist in creating new communities of interest with other areas, helping the growth and welfare of the district it serves.
4. Provisions should be made for the use of practical and sound administration in the management and promotion of airport facilities.
5. And, most important, the airport should be conceived, developed, and financed in the best interests of each of the taxpayers of the area.

Houston Bids and Wins

THERE is much competition among cities to be on the route of air travel to the Americas. Houston, Texas, has no intention of letting it all go through New Orleans and Miami, particularly when Houston is on such a direct route to important midwestern centers.

Last May, the city won a fight for "gateway" status and three air lines received certificates to operate internationally. These include operations by Braniff to the principal capitals of South America via Havana and the Canal Zone; to the principal cities of the Caribbean islands and Venezuela by Chicago and Southern, and to Guatamala City via Merida, Mexico, by Pan American.

To care for increased air traffic, Houstonites voted last July in favor of a $6,000,000 bond issue to improve air facilities. A new $1,700,000 international airport terminal building (shown in picture) will be located on a 400-acre tract north of the present airport. On the top deck of the building there will be a curved and glass-fronted observation areaway as well as a dining room for passengers and visitors. The U. S. customs and immigration offices and air mail, air express, and air freight offices will be on the lower floors along with traffic control, radio, and weather offices, airline offices, a passenger waiting room, and a baggage room. To load and unload planes at a rate of thirty-five at a time, the building will have covered loading piers 450 feet long.

Municipal Lawyers Move for Airport Support

INEQUITIES in airport legislation and operation came in for study by the National Institute of Municipal Law Officers recently in Washington at the Institute's annual meeting, and resulted in a number of resolutions designed to remedy these injustices. Part of these resolutions follow:

Resolution #1. . . . Be it resolved by the National Institute of Municipal Law officers that this organization . . . go on record as opposing the attempts by state governments . . . to secure political control of the funds provided for in the Federal Airport Act and as condemning any and all proposed state legislation designed to accomplish this end, including specifically the governors' so-called "model" act.

Resolution #2. . . .Be it resolved . . . that all so-called "model" or other lease agreements for airport use tendered to cities by the airlines for execution be thoroughly scrutinized and diligently examined by members of this organization . . . so that a united front may be maintained by cities against inroads being made on their potential revenue sources by the inequities of the so-called "model" lease agreements.

Resolution #7. . . . Be it resolved . . . that . . . this organization place itself on record as favoring the immediate reintroduction and passage of a remedial measure in the next session of Congress . . . so that federal funds under the Federal Airport Act may be available at the earliest possible time for assistance to Class IV and V airports.

Resolution #10. . . . Be it resolved . . . that the War Assets Administration and other governmental agencies be urged to eliminate all delay in the expeditious return of surplus airports.

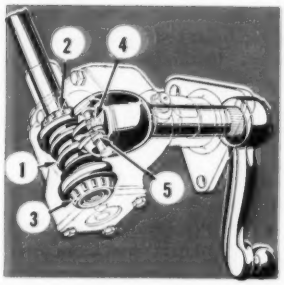
XUM

REGISTRATIONS *SHOW* IT — OPERATORS *KNOW* IT!

"FORD TRUCKS LAST LONGER!"

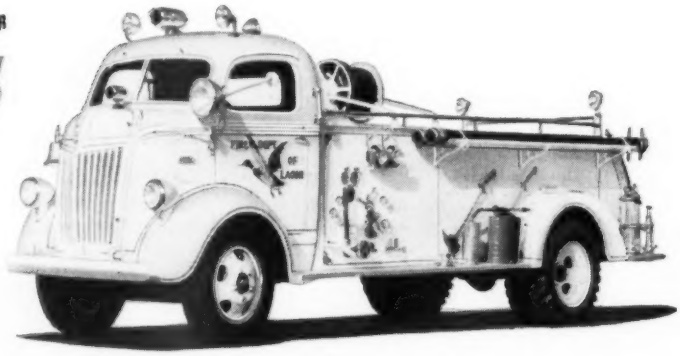
ONE big reason— FORD STEERING STANDS UP!

Ford worm-and-roller steering gear reduces *rubbing* friction to a minimum. *Rolling contact* is employed to reduce friction at five vital points. This spares muscle and saves wear. The worm gear (1) is straddle-mounted on two large, opposed, tapered roller bearings (2 and 3). The worm acts upon an easy-turning roller instead of a common sliding cam or split-nut, and this roller is mounted on two needle-type roller bearings (4 and 5). Bearings of both the worm and the sector shafts may be adjusted, thus promoting long life and proper action with less replacing of parts.



Ford

THE 6 YOUR PICK OF POWER THE V-8



The rugged Ford heavy duty Cab-Over-Engine chassis provides the stamina, reliability and maneuverability so requisite in fire-fighting. Body is by Howe Fire Apparatus Co., Anderson, Ind.

ONLY FORD GIVES YOU ALL THESE LONG-LIFE TRUCK FEATURES: Your choice of two great engines, the V-8 or the Six—semi-centrifugal clutch that needs no maintenance lubrication—rear axle design that takes all weight-load off the shafts (¾-floating in half ton units, full-floating in all others)—heavy channel section frames, *doubled* between springs in heavy duty models—big, easy-action brakes, with heavy, cast drum surfaces, non-warping and score-resistant —extra-thick sheet metal in cabs, cowls, skirts and fenders—all told, more than fifty such examples of Ford endurance-engineering.

That's why FORD TRUCKS LAST LONGER . . . why, as the national truck count for 1946 just released shows, *more than half of all Ford Trucks in use are at least 9 years old* . . . why there are more Ford Trucks in service now than ever before in history. More than 100 body-chassis combinations to choose from. Ask your Ford Dealer.

MORE FORD TRUCKS IN USE TODAY THAN ANY OTHER MAKE

Bayonne Fire Department Emphasizes Training

By JAMES G. HOGAN
Fire Chief
Bayonne, N. J.

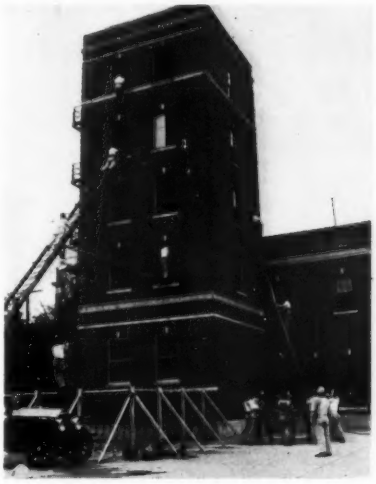
THE oil refining and distributing center for The Texas Co., Standard Oil of New Jersey, The Tidewater Associated Oil Co., Richfield Oil Corp., Asiatic Petroleum Corp., and Baker Castor Oil Co., is Bayonne, N. J. These and other large factories maintain excellent fire services; but, as proved by a tank fire in 1945 when thirty-one of our firemen received burns, the Bayonne Fire Department must be ready for anything.

The personnel comprises a chief, two deputy chiefs, a superintendent of fire alarm, a superintendent of apparatus, a master mechanic and four mechanics, two engineers, thirty-three chauffeurs, three chaplains, and 119 first-class firemen. All these have taken the five-week training course at our own fire college, erected in 1938. Situated in City Park, this large brick training plant, designed by the Paterson architects, Fanning & Shaw, was planned to meet our own requirements, which were set forth after a nationwide study of fire colleges in other cities.

Some 10,000 firemen, wardens, and airplane watchers received training during the war. The care and effectiveness of the instruction is evidenced by the fact that only one of the rookies fell into the Superior fire net shown in the picture. The fire college also serves as Engine Company No. 4, equipped with a 1,000-gpm American LaFrance pumping engine and a lighting truck mounting four 500-watt Pyle floodlights, three Foamite generators, and two Homelite electric generators.

The seven engine companies have six 1,000-gpm American LaFrance pumping engines and a Mack of the same capacity. One of the two rescue trucks is a Mack 750-gallon pumping engine. There are three truck companies, equipped with American LaFrance aerials, one 100 feet high and two 75 feet high. In reserve are three pumping engines and a 65-foot aerial truck. On duty at the repair shop are a Cadillac coupe, a Studebaker truck, a Robinson wrecker, and a Seagrave foam truck.

The deputy chiefs' cars are connected with the police two-way radio, first installed in 1933. The original Fred M. Link installation was replaced with AM 33.5-megacycle equipment, and this is now being replaced by Link FM 155.49-mc equipment. Our radio cars, as well as the twenty police cars, are equipped with heavy-duty Hand batteries and Leece-Neville alternators.



Rookies receiving training at fire college of Bayonne, N. J.

Our fire alarm is a 100% Gamewell automatic, which was installed in 1907. There are 175 street boxes and ten private boxes. In installing or reinstalling boxes, we use Buchanan splice caps to avoid nicking the terminal wires that connect the boxes. Box alarms in 1946 totaled 513, made up of the following: 195 street box alarms, 142 pulled from headquarters, 2 pulled on test, 42 instances of two boxes pulled for the same fire, 3 second alarms, and one general alarm.

A principal criticism in an exhaustive report by the National Board of Fire Underwriters in 1938 was that the fire department, while well manned and equipped, lacked sufficient training. Specifically, "Drills observed during this inspection were rather poor and emphasized the need of a drill tower and regular drills held under the direction of a competent drill master." The accompanying picture of Bayonne's modern drill tower is evidence that this criticism was promptly met.

It's Fireproof, But Who Wants to Sleep in a Stove?

THE number of disastrous hotel fires in the latter half of 1946 has directed the attention of local officials to the term "fireproof." Hotels built under the requirements of a city building code, modeled upon the National Board of Fire Underwriters' recommended building code, can correctly advertise that they are fireproof. But, as General Manager W. E. Mallalieu of the board points out, in a fireproof structure the contents of the building can be completely destroyed while the framework of the building still stands.

The lesson of the Winecoff Hotel fire, analyzed in the January issue of THE AMERICAN CITY, is that the term "fireproof" as applied to a hotel should not be used even though the structure of the building is of fireproof construction, unless all vertical openings, such as stairs, elevators, and other shafts are enclosed with partitions and have fire doors on all openings, thus preventing the upward travel of the fire from one floor to another. This vertical travel of fire was the prime cause of death and injury in both the Hotel LaSalle fire in Chicago and in the Hotel Winecoff fire. Also, says Mr. Mallalieu, the separating partition and doorway between rooms and the corridor must be of a type that will prevent the ready spread of fire from the room to the corridor, or from the corridor to the room; this last means that there shall be no transom, and that any air conditioning system shall be of a design which will not permit the travel of heated, poisonous gases into rooms.

The fire insurance interests have no police power to require that these features be added to hotels, apartment buildings, clubs, office buildings, and factories, all of which should have this protection to stairways, light shafts, elevators and other passageways to prevent the vertical travel of fire from floor to floor. Therefore, the correction of these conditions is, properly, a function of the municipality, which should include a retroactive clause in its building code under which these provisions are required, or that the building be made safe for human occupancy through the installation of an automatic sprinkler system.

As pointed out last month in THE AMERICAN CITY account of the Winecoff tragedy, the solution is not to get the people out of fireproof buildings, but to keep them safe in their rooms.

"HTH has no equal!"

says Everett Harris, First Engineer, Moberly Water Dep't, Moberly, Mo.

Water Plant—Moberly, Mo.

SANITATION HTH is available in cases of nine 5-lb. cans and in 100-lb. drums.

FOR 18 YEARS, *Sanitation HTH has been used consistently by the Water Dep't of Moberly, Missouri for regular and special chlorination . . . for cleaning filtration screens . . . for treatment of coagulation basins and pipelines.*

So these comments of Mr. Harris really count: "I know what HTH can do, and I wouldn't be without it; in addition to using it every day, I insist that we keep at least 12 cases of HTH on hand for any possible emergency. In my opinion, HTH has no equal!"

Mathieson's 80-page booklet "Hypo-Chlorination of Water" not only discusses the many uses of Sanitation HTH, but also describes standard sanitation practices. It's a valuable reference manual, and it's free to all water works men. Send for your copy today! THE MATHIESON ALKALI WORKS (INC.), *60 East 42nd Street, New York 17, N. Y.*

Mathieson
SANITATION HTH

Sanitation HTH . . . Liquid Chlorine . . . Chlorine Dioxide . . . PH-Plus (Fused Alkali) . . . Caustic Soda . . . Soda Ash . . . Bicarbonate of Soda . . . Ammonia, Anhydrous & Aqua . . . Dry Ice Carbonic Gas . . . Sodium Chlorite Products . . . Sodium Methylate

Sewerage and Sewage Treatment

How to Measure Aeration Efficiency

WHEN calculating the efficiency of an activated sludge plant, one should think of the work that the aid does rather than the amount of air administered per unit of sewage flow. This recommendation was made by Dr. F. W. Mohlman, Director of Laboratories for the Sanitary District of Chicago, in a discussion of activated sludge problems at the annual meeting of the Federation of Sewage Works Associations in Toronto. Cubic feet of air required per pound of BOD removed is a better relationship than cubic feet of air per gallon of sewage.

Paul Uhlmann, consulting engineer, Columbus, Ohio, gave further emphasis to Dr. Mohlman's recommendation, stating that another factor for determining efficiency is cubic feet of tank capacity per pound of BOD removed.

E. J. M. Berg, Superintendent of Sewage Treatment, San Antonio, Texas, cautioned that the air blown through the sewage does not do the entire work by itself. Much of the work is done by the air absorbed from the atmosphere. He stated that his plant requires 900 cubic feet of air per pound of incoming BOD if the plant is running well and 1,000 or more feet if the plant is running badly.

How to Treat Synthetic Rubber Wastes

SYNTHETIC rubber wastes create taste and odor problems in streams used for water supply. Laboratory studies show that these problems can be alleviated by any of the following pre-treatment methods:

1. *Aeration.* Diffused air introduced into the wastes under specified conditions will reduce the odor concentration from a range of 2,000–4,000 to an average of 200. It is more effective on butadiene than styrene wastes.
2. *Chlorination.* This will require dosages ranging from 260 ppm on filtered wastes to 450 ppm on raw wastes. It will produce an effluent that an average water treatment plant can handle successfully in much higher concentrations.
3. *Sulphur compounds.* Reduces odor but its reaction is slow.
4. *Activated sludge.* Successful with a twenty-four-hour aeration period when handling no more than 25% butadiene and styrene with a good domestic sewage and with sludge solids in the aeration mixture above 2,000 ppm.

A water treatment plant can remove tastes and odors resulting from these wastes only by the use of heavy doses of activated carbon, amounting to 100 ppm or more. Breakpoint chlorination gives variable results and must be accompanied by extremely close laboratory control. Aeration results in some improvement but not sufficiently to overcome the problem.

These points were brought out before the recent annual meeting of the American Society of Civil Engineers in a paper delivered jointly by Frank E. DeMartini, Clarence C. Ruchhoft, and D. R. Placak, water and sanitation investigators, U. S. Public Health Service, Cincinnati, Ohio.

The Phantom Sewer

THE little man who wasn't there has nothing on the little sewer that wasn't there either.

Harrison, N. J., officials have been anxiously looking over tattered maps, and city crews were industriously swinging shovels in an earnest search for 752 feet of sewer line that has been listed on maps since 1913 and for which property owners have been taxed ever since. Eventually, officials conceded that the 752 feet of sewers simply did not exist and that the manholes along the route are dummies.

The town board has instructed its attorney to investigate to determine if a fraud exists. However, because of the age of the case, Town Clerk Edmund L. Pendleton expressed the opinion that any guilty persons have already received their punishment in the hereafter.

Illinois Gets Cooperation from Industry

A POLLUTION load equivalent to the domestic sewage of 350,000 persons will be lifted in Illinois this year through the cooperation of the Illinois Sanitary Water Board, the Greater Peoria Sanitary District, and the Commercial Solvents Corporation, at its Peoria, Ill., plant. The corporation plans a treatment plant that will reclaim wastes resulting from the manufacture of industrial solvents utilizing corn and molasses. The installation, when completed, will recover valuable livestock feed supplement by the use of additional boiler capacity, evaporators, and drying equipment.

This installation is the final increment in a stream pollution abatement program of this corporation and will effect complete recovery of all solids contained in the distillation residues when the plant is operating at capacity production. In 1938 the corporation installed a recovery plant for a portion of its process wastes, which at that time reduced the pollutional load by an amount equivalent to the domestic sewage from 138,000 persons.

In commenting upon this program, C. W. Klassen, technical secretary of the Illinois Sanitary Water Board, stated that while the abatement of stream pollution is the board's primary objective, promoting the recovery of by-products from waste material has been a definite part of the program also.

Michigan Water and Sewage Plans Move Ahead

APPROXIMATELY 170 water works improvement projects in Michigan are in the planning stage, with many having the plans completed ready for a favorable construction period. The work will involve an estimated $38,000,000 in construction costs, with the preparation of plans running into a cost of slightly less than $1,000,000.

An accelerating factor in the work was a state legislative act passed in 1944, which provided the sum of $5,000,000 to be allocated to governmental units for the purpose of defraying part of the cost of preparing plans. The funds were allocated as outright grants and, as a rule, met 50% of the cost of the plants. The allocation was under the direction of the Michigan Planning Commission.

More than three hundred sewer and sewage treatment plant projects are proceeding through the planning stage. Of these plans, approximately half have been completed and more than sixty involve new treatment plants.

According to W. P. Edmonson, deputy director, construction on many of these projects has not been started on account of existing conditions; however, municipalities have expressed a desire to go forward just as soon as labor and equipment are available to do the work.

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Prolong the life of your drills — assure fewer repairs and replacements — by lubricating them with Texaco Rock Drill Lubricants (E.P.). These famous, extreme-pressure lubricants prevent rust, resist wash-out, effectively protect all moving parts against wear even in the heaviest service. All conform to the lubrication specifications set by leading rock drill manufacturers.

LUBRICATE your compressors with *Texaco Alcaid, Algol or Ursa Oil* and valves will stay *clean* . . . assuring more efficient and economical compressor operation with full air pressure at your drills hour after hour.

Texaco Alcaid, Algol and Ursa Oils are free of impurities that lead to formation of hard carbon deposits. They keep rings free, valve action smooth and lively, ports and air lines clear. They provide Effective Lubrication for all your compressors — whatever their type or size.

For Texaco Products and Lubrication Engineering Service, call the nearest of the more than 2300 Texaco distributing plants in the 48 States, or write:

The Texas Company, 135 East 42nd Street, New York 17, N. Y.

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FOR ALL CONTRACTORS' EQUIPMENT

Tune in . . . TEXACO STAR THEATRE presents the NEW EDDIE BRACKEN SHOW every Sunday night. METROPOLITAN OPERA broadcasts every Saturday afternoon.

Stop—Check and Mail

Please check over the list of interesting free catalogs on this and following pages. To obtain the literature you want, write direct to the manufacturers, or circle the identifying numbers on his coupon and mail it to The American City Magazine, 470 Fourth Ave., New York 16. We will see that catalogs are sent to you without expense or obligation.

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Name ..... Position .....

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Unusual Uses for Jacks

464. The Blackhawk Mfg. Co., Milwaukee 1, Wis., has just published a new catalogue that gives time- and money-saving hints on ways of using a jack. Describing hand jacks up to 100-ton capacity, gage jacks ,and wheeled floor jacks, this booklet may be obtained by writing to the catalogue department of the company for Catalogue J-47.

Two Ways to Kill Weeds

465. The C. B. Dolge Co., Westport, Conn., produces two types of weed killer. One, Dolge Weed-Killer, is particularly useful where no vegetation at all is desired. This sterilizes the soil and prevents seeds from sprouting. The E. W. T. Selective Weed-Killer does not sterilize most soils and is also effective for controlling ragweed and poison ivy. Write for additional data.

Pumps With Minimum Internal Leakage

466. The De Laval heavy duty centrifugal pumps are all equipped with the De Laval Labyrinth wearing rings which reduce internal leakage from discharge to suction. This is one of the primary factors for the long service and trouble-free efficiency of these pumps. Write to the De Laval Steam Turbine Co., Trenton 2, N. J. for information.

Emergency Traffic Stop Signals

467. A control cabinet which master-regulates red signals on traffic lights can instantly stop all vehicular traffic in a given area during emergency periods. Clear the way for police, fire, and ambulance cars with the Crouse-Hinds All-Red control cabinet. Write for catalog 226, Crouse Hinds Co., Syracuse 1, N. Y.

4-Lane Spreader Mounts On Any Truck

468. The Model E ice control unit manufactured by the Highway Equipment Co., Inc., 629 D Avenue N. W., Cedar Rapids, Iowa, can be mounted on any truck chassis and used during warm seasons for spreading oil or dust-control chemicals. In the winter, it is the ideal way of applying sand or cinders on ice. Write for details.

Water-Level Recorder

469. Write to Leupold & Stevens Instruments, 4445 N. E. Glisan St., Portland 13, Ore. for Bulletin No. 12 on the Stevens water-level recorder. Makers of mechanisms for hydrographic, surveying, and navigation automatic controls, Leupold & Stevens first developed the Type A35 recorder in 1911. The use of a continuous chart and an unlimited range of stages in the recorder are described in the bulletin.

Lower Treatment Costs Of Water and Sewage

470. The Tennessee Corp., Grant Bldg., Atlanta 1, Ga., will send you information on effective methods of lowering the costs of treating water, sewage, and other products by using Ferri-floc. Ferri-floc is easily soluble in cold water. Fans on the solution pot are unnecessary as no fumes are emitted, even in warm water.

Water and Sewage Pumps

471. Information about water supply and sewage pumps of any capacities is given, respectively, in Bulletins 164 and 160, available from Morris Machine Works, Baldwinsville, N. Y.

Are You Building a New Airport?

472. A skilled, responsible contractor is invaluable to the construction of an airport. When drawing your plans and arrangements for bids, contact the Associated General Contractors of America, Munsey Bldg., Washington 4, D. C. This organization has made it a point to keep alert to the construction needs of municipal airports and can give your city specific assistance.

Aluminum Wire In Place of Copper

473. With the copper shortage still acute, you may be interested in the use of aluminum building wires protected with Type RH heat-resisting insulation and thereby made as efficient and economical as copper. Write to the Hazard Insulated Wire Works Division of The Okonite Co., Wilkes-Barre, Pa., for its bulletin H-407.

AC and DC, 350 to 35,000-Watt Generating Sets

474. Fairbanks-Morse will send you literature on its various standby generating sets, invaluable in case of power failure and dependable for continuous service. Write to Dept. N, Fairbanks, Morse & Co., Chicago 5, Ill.

Use the Right Electrical Terminal

475. Don't spoil a good electrical installation by using the wrong electrical terminal. There is a right and a wrong terminal for each connection. A catalog published by the Aircraft Marine Products Inc., 1598 North Fourth St., Harrisburg, Pa., gives details about these types, tells how they are constructed and how to use them to get the most out of them for your particular use. Write to this company for its AMP catalog.

Keep Your Streets Repaired

476. The Adams motor grader has been found to be of great service by many municipalities in the repair and rebuilding of streets as well as in the paving and maintenance of unpaved areas. Write to the J. D. Adams Mfg. Co., Indianapolis, Ind., for details of various sizes of graders.

Fog Out Those Insect Pests

477. One of the most rapid and effective methods of eliminating insects from parks, beaches, and dumps is insecticidal fogging. Tifa is a compact fog applicator engine that is operated by one man and can be mounted on a small truck. The Combustion Equipment Division of Todd Shipyards Corp., 601 W. 26 St., New York 1, N. Y., will send you an illustrated folder.

Reflectorized Signs

478. You may be interested in investigating the reflectorized signs of the Miro-Flex Co., 1824 East Second St., Wichita, Kans. The Miro-Flex Co. manufactures a complete line of plain or embossed signs, including two- and four-way street signs. Send for the catalog of stock signs.

Water Really Soft

479. Do you need water that is completely demineralized? Refinite water-conditioning equipment will condition a hard, brackish water so that it is as soft and free of minerals as distilled water. Write to the Refinite Corp., Refinite Bldg., Omaha, Nebr., for a booklet describing water-softening equipment.

More Light— Less Glare

480. An innovation in optical systems in the Westinghouse OV-20 street lights increases the illumination while reducing the amount of glare. Bulletin B-3790, distributed by the Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa., describes the new design and construction of this latest of mercury vapor lamps.

Shotcrete Concrete Is Stronger

481. Bulletin 2300, published by the Cement Gun Co., Allentown, Pa., contains 72 pages of information about the Cement Gun and Gunite, their application, and the advantages of using them together. The Cement Gun sprays at high velocity a sand-cement product which is mixed dry in the gun and is hydrated immediately before ejection. As a result, the material possesses great strength, adhesiveness, and permanence.

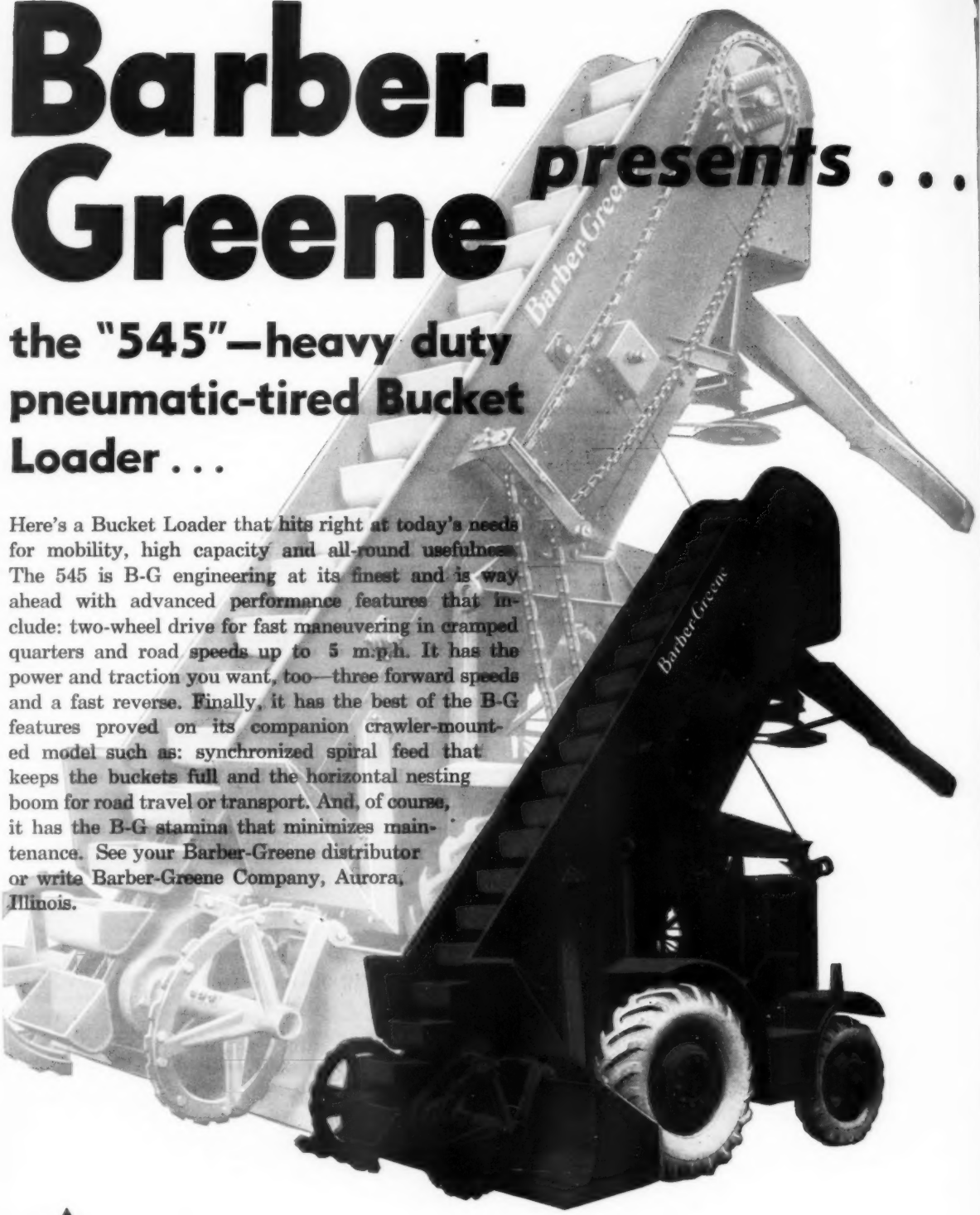
(*Continued on page* 21)

XUM

Barber-Greene presents . . .

the "545"—heavy duty pneumatic-tired Bucket Loader . . .

Here's a Bucket Loader that hits right at today's needs for mobility, high capacity and all-round usefulness. The 545 is B-G engineering at its finest and is way ahead with advanced performance features that include: two-wheel drive for fast maneuvering in cramped quarters and road speeds up to 5 m.p.h. It has the power and traction you want, too—three forward speeds and a fast reverse. Finally, it has the best of the B-G features proved on its companion crawler-mounted model such as: synchronized spiral feed that keeps the buckets full and the horizontal nesting boom for road travel or transport. And, of course, it has the B-G stamina that minimizes maintenance. See your Barber-Greene distributor or write Barber-Greene Company, Aurora, Illinois.



BARBER-GREENE COMPANY · AURORA, ILLINOIS

Constant Flow Equipment

LOADERS · PERMANENT CONVEYORS · PORTABLE CONVEYORS · COAL MACHINES · BITUMINOUS PLANTS · FINISHERS · DITCHERS

Stop—Check and Mail

Use Coupon on Page 19

Low-Cost Weed Control

482. With Weed-No-More, the 2, 4-D weed killer, you can get rid of weeds (including ragweed) on golf courses, parks, parkways, public lawns, roadsides, vacant lots, etc. The Sherwin-Williams Co., Cleveland, Ohio, will send you a free copy of the new illustrated booklet, "Achieving and Maintaining Weed-free Turf with Weed-No-More, 2, 4-D Weed Killer."

Avoid Water Damage with Fog Fire Fighting

483. Fog gun units have been found highly effective in fire-fighting because of their ability to extinguish fire with the use of a much smaller percentage of water. The diminished water damage that results has proven a valuable factor. Hardie equipment includes both fog and stream units, pumps, hose, and lighting generator. For further details, write to the Hardie Mfg. Co., Hudson, Mich.

Long-Lasting Broom Fibers

484. Long mileage and efficient service are the two assets of the broom fibers manufactured by the Otto Gerdau Co., 82 Wall St., New York 5, N. Y. Write to them for information, samples, and quotations.

Tilt Top Trailers

485. Available in two sizes—5- and 8-ton capacity—the Tilt Top Trailer is characterized by particularly facile loading which can be done by one man. These trailers can be purchased for immediate delivery. Write to the Milwaukee Power Equipment Co., 525 North 22 St., Milwaukee 3, Wisc, for additional information.

Diesel, Gasoline, and Gas Powered Engines

486. On land and sea, Sterling engines have been used for a multitude of purposes from airport lighting and control to bridge operation. Diesel, gasoline, and gas powered, the sizes vary to include anything from running a hand snow plow to an electric light plant. Officials may obtain information and consultation, with no obligation, by writing to Sterling Engine Co., 1270 Niagara Street, Buffalo 13, N. Y.

Sludge Digestion

487. This bulletin should be in every municipal official's file, particularly if he numbers sewage treatment among his responsibilities. The Dorr Co., 570 Lexington Ave., New York 22, N. Y., has prepared an outstanding 58-page, two-color treatise not only on the various types of Dorr Digesters but also on the history, theory, and practice of digesting sewage sludges under controlled chemical, physical and thermal conditions. You will learn how it works, what it does, and what experience other cities have had in sludge digestion. When writing, ask for bulletin 6261.

Water and Sewage Flow

488. If you are interested in improving the efficiency of flow of water, sewage, or industrial liquids, write to the Simplex Valve & Meter Co., Dept. 303, 68 and Upland St., Philadelphia 42, Pa., for detailed information about its Type-S parabolic flume. The company will send you detailed information about design and specifications.

Pre-Mixed Zone Paint

489. For information about Redi-Mix, the zone and traffic-line paint that comes ready for use, write to A. J. Schmidt Co., Kiel, Wis. Redi-Mix is available in white and yellow, and it has been found highly resistant to peeling.

Duplicators Available

490. Mimeograph brand duplicators with hand operation and high visibility are available for delivery. These machines, manufactured by the A. B. Dick Co., Dept. AC-347, 720 West Jackson Blvd., Chicago 6, Ill., feature a cushion sheet which results in a clearer, sharper page.

Automatic Valves

491. The Ross Valve Mfg. Co., Inc., P. O. Box 596, Troy, N. Y., will send you their catalogues explaining in detail the mechanism of their altitude, combination, and remote control valves. These precisely manufactured products come in a wide variety of styles: single, double, or combination activating, primary or secondary control.

Bitumuls Reduce Cost of Paving

492. Bitumuls, emulsified asphalts, and asphalt composition products, have been found valuable by municipalities for low-cost paving and airport runways since soil or sand is utilized and the purchase of processed aggregates is eliminated. This product has been extensively used for waterproofing newly paved surfaces, and for dust control by its addition to sprinkling water. The American Bitumuls Co., 200 Bush St., San Francisco 4, Calif., will send you its pamphlet on the uses of bitumuls.

Recordak—Modern Method of Keeping Records

493. Easy to use, compact, and permanent, Recordak film reproductions of records are a lasting and space-conserving means of keeping records used by many federal, state and municipal government departments. Reducing to but 2% of the filing space ordinarily required, this equipment is available on a monthly rental basis. Write to Recordak Corp., 350 Madison Ave., New York, N. Y., for their catalogue.

One Machine to Mow the Lawn or Plow Snow

494. The Ideal Power Mowers Co. offers a variety of machines which can be equipped for snow plowing as well as lawn mowing. Ideal for parks, since the swath can be increased to 16 feet by the addition of wing units, these machines may be purchased in a variety of sizes. For information about your particular requirements, write to Ideal Power Lawn Mower Co., Springfield, Mass.

Transportable Street Roller Reduces Time-Waste

495. A portable roller that does the work of a 5- to 7-ton roller, but can be quickly transported from job to job by hitching to a truck, is particularly valuable in reducing transportation time from one construction or repair site to the next. The roller is transported by attaching it to the truck tow bar, traveling on its tires with the roller lifted off the ground. For detailed description, write to The Galion Iron Works & Mfg. Co., Galion, Ohio.

Precision Corporation Stops & Curb Stops

496. Tested for pressures considerably greater than the safety margin of any city line, Mansfield's Micro-Seal Corporation stops and curb stops are designed on the tapered-bore principle with precision fit of bore and plug. Write to the Mansfield Brass & Aluminum Corp., 287 North Diamond St., Mansfield, Ohio, for information about their immediate-delivery stops.

All About Airport Buildings

497. The Luria Engineering Corp., 500 Fifth Ave., New York 18, N. Y., will send you upon request a booklet describing its full line of airport hangers and administration, shop, and utility buildings. The hangars will be of particular interest, since they are highly flexible in size and can be adjusted in length.

Pumps for Heavy-duty, Continuous Performance

498. Where continuous and heavy pumping performance is necessary with a minimum of maintenance, investigate the possibilities of a Peerless centrifugal pump. Specialized for intricate performance, Peerless pumps range up to 60,000-gpm capacities. Further information may be obtained by writing to the Peerless Pump Division, Food Machinery Corp., 301 W. Avenue 26, Los Angeles 31, Calif.

Refractors Assure Proper Lighting

499. For maximum safety through efficient lighting, provide the right type of refractors. The Holophane Co., Inc., Street Lighting Dept., Newark, Ohio, will send you information about its refractors or a reprint of the Illuminating Engineering Society's code, *Recommended Practice of Street and Highway Lighting*, upon request.

Reduces Maintenance Costs with Mud-Jack

500. An effective method of reducing maintenance on sunken sidewalks and gutters is the use of the Koehring Mud-Jack. This machine drills small holes under the concrete slab and pumps inexpensive slurry under the surface, strengthening and replacing the depressed foundation. For additional information, write to the Koehring Company, Milwaukee 10, Wis.

Improved Asphalt Heaters

501. A new double vat kettle for melting rubber sealers, indirectly heated and controlled automatically by thermostats, is the latest advance in the use of rubberized asphalt. Produced by Aeroil Products Co., 5705 Park Ave., West New York, N. J., this kettle meets all state and federal specifications. Write for Bulletin 310AC, which contains suggestions and complete details.

Direct Meter Checking

502. The Ford Meter Box Company, Inc., Wabash, Ind., will send you its catalogue about the Tandem Resetters. This mechanism permits direct checking of a meter in operation. The tandem resetter is installed in series with the meter, and the performance of the latter is ascertained without the entrance of any variable factors.

Kill Those Algae

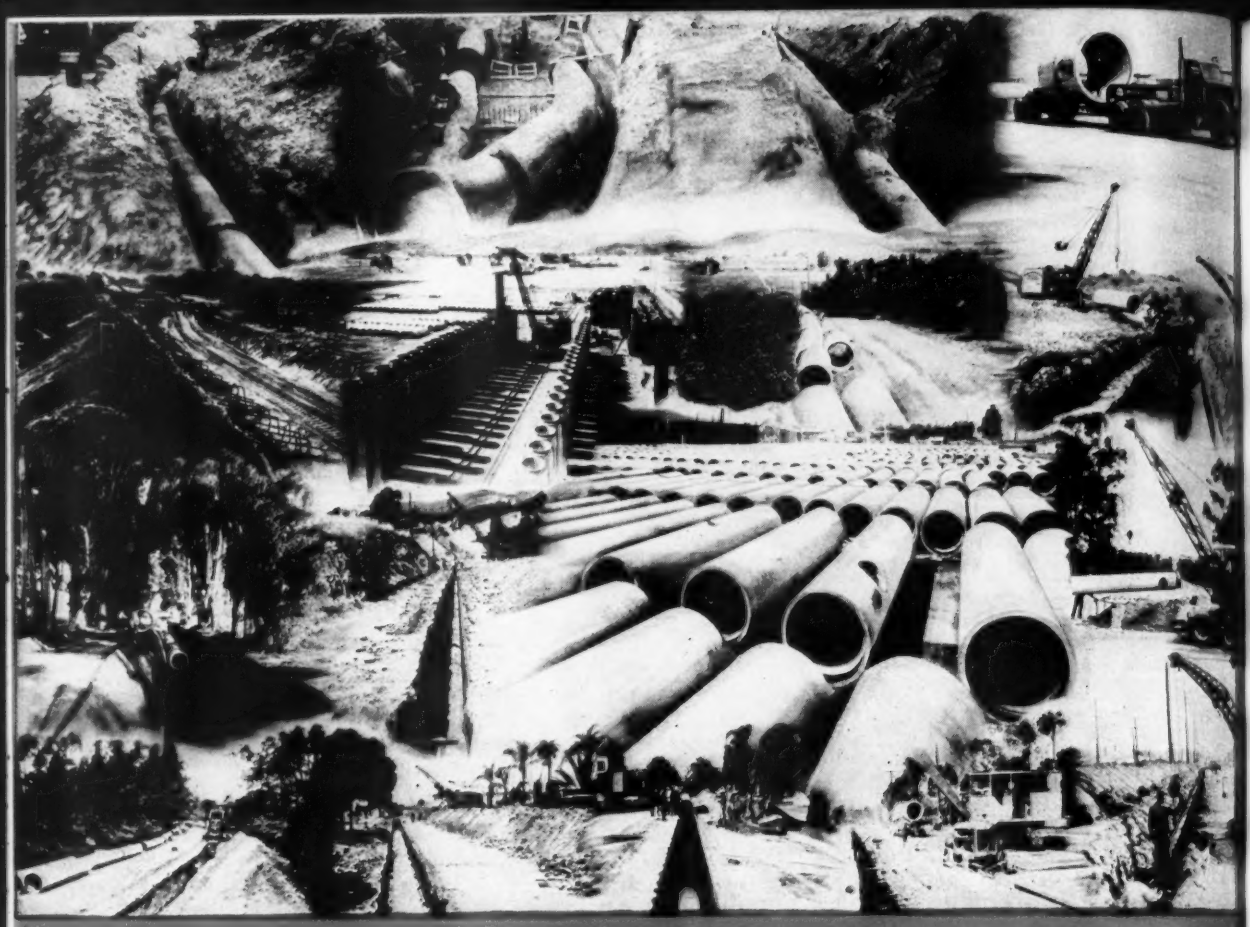
503. The proper use of copper sulphate for destroying and controlling microscopic organisms in water is thoroughly discussed and fully illustrated in a booklet by Dr. Frank E. Hale, available without charge from Phelps Dodge Refining Corp., 40 Wall St., New York 5, N. Y.

Chemistry Advice

504. If any of your municipal problems deals with chemistry you may get some help in this field by writing to Foster Dee Snell, Inc., 305 Washington St., Brooklyn 1, N. Y., consulting chemists and engineers asking for their booklet "Engineering Services." This firm also publishes a house organ "The Chemical Digest," and a brochure, "Consulting Chemist and Your Business," which it will send free to those interested.

(*Continued on page* 23)

XUM



TYPICAL INSTALLATIONS

American PIPE & CONSTRUCTION CO.

PARTIAL LIST OF RECENT PROJECTS

- Bear Valley pipe line extension (Escondido Mutual Water Co.)
- Camp Cooke main water supply line (U. S. Army)
- Camp San Luis Obispo main water supply line (U. S. Army)
- Del Mar Avenue transmission main (San Gabriel County)
- Gaffey Street pipe line (Los Angeles)
- Green River supply line replacement (Tacoma)
- Glendale-Burbank feeder (Metropolitan Water District of So. Calif.)
- Hanford Engineering Works (U. S. Army)
- Murray Reservoir line (San Diego)
- Orange County feeder (Metropolitan Water District of So. Calif.)
- Wardlow Rd. & Alamitos Reservoir pipe line (Long Beach)
- San Vicente pipe line (Federal Works Agency)
- Santa Anita Calaveras feeder line (Pasadena)
- San Diego Aqueduct (U. S. Navy)
- Treasure Island supply line (U. S. Navy)

Leadership in Main Water Supply Line Construction

- ✓ Lock Joint Concrete Cylinder Pipe
- ✓ Prestressed Lock Joint Concrete Cylinder Pipe
- ✓ American Concrete Cylinder Pipe
- ✓ Centrifugal Concrete Pressure Pipe

There are several important reasons for this leadership. High sustained carrying capacity is one. Permanent type of construction is another. The right kind of pipe is available for each different installation. And in addition, these advantages can be obtained with maximum economy. Write for complete information.

AMERICAN PIPE & CONSTRUCTION COMPANY

Concrete Pipe for Main Water Supply Lines,
Storm and Sanitary Sewers, Subaqueous Pipe Lines

P. O. BOX 3428, TERMINAL ANNEX, LOS ANGELES 54, CALIFORNIA

MAIN OFFICE AND PLANT—4635 FIRESTONE BLVD., SOUTH GATE, CALIF.
DISTRICT OFFICES AND PLANTS—OAKLAND; SAN DIEGO; PORTLAND, ORE.

Stop—Check and Mail

Use Coupon on Page 19

A Repair in Time Saves Costly Paving Rehabilitation

505. Minor repairs with road tar made correctly will prevent costly deterioration of your city's roads. Ask for a Tarvia road tar field representative to help you with your maintenance requirements. Write to the Barrett Division Allied Chemical and Dye Corp., 40 Rector St., New York 6, N. Y. Barrett has also prepared a half-hour color film on roads, which will be available to civic officials and engineers.

Portable Pumps

506. Officials interested in a portable pump that incorporates the type of service ordinarily unobtainable in any but larger styles may obtain complete information from the Homelite Corp., Port Chester, N. Y. The Homelite pump is self-priming, pumps rapidly with high lift, and automatically controls seepage. It is gasoline-engined. An on-your-job demonstration is also offered by the Homelite Corporation.

Copper Pipe & Fittings

507. Streamline copper pipe and fittings are rust-proof, vibration-proof, and joined by capillary attraction instead of threading or flaring. These three points make a long-lasting and effective pipe for any type of water work. The substitution of capillary attraction for threading effects a considerable economy by reducing the thickness of the wall required, and, at the same time, increasing the strength of joints. Write to Streamline Pipe & Fittings Div., Mueller Brass Co., Port Huron, Mich., for additional data.

Reliable Hydrants

508. The most modern equipment is useless if the fire hydrants of your community are faulty. Mathews hydrants, manufactured to give instant service, have a sealed thread which completely eliminates any slow-down in the operation of the revolving nut. For easy repair work, all of the working parts are contained in its removable barrel. Write to R. D. Wood Co., Public Ledger Bldg., Independence Square, Philadelphia 5, Pa.

Avoid Tearing Up Streets When Laying Pipe Lines

509. The Hydrauger safely bores open holes under paving and expensively landscaped areas for pipe lines. This method, highly economical in the labor and demolition saved, will be detailed to you if you write to the Hydrauger Corp., Ltd., 116 New Montgomery St., San Francisco 5, Calif.

Hose Wears Longer, Takes Less Room

510. The 25% decrease in the space required by bi-lateral fire hose appreciably increases its value in fire-fighting. The flattened position also helps to stave off cracking of the inner rubber tubing. Write to Bi-Lateral Fire Hose Co., 20 N. Wacker Drive, Chicago, Ill., for data.

Protect New Pipe Lines

511. A new automatic cement lining and troweling machine for pipe lines of 30-inch diameter and larger is described in a new Pipelining Bulletin available free from The Preload Corp., 420 Lexington Ave., New York 17, N. Y.

Fire and Police Siren

512. For information about a large, loud, mechanical siren requiring no battery and putting no strain on the fan belt, write H. O. R. Co., Inc., 40 Broadway, Staten Island 10, N. Y.

Diesel-Engined Power Plants

513. The use of Nordberg Diesel Engines in its power plant has advanced one municipality to the enviable position of being recognized as one of the outstanding producers of a low-cost generating station. If your city requires additional capacity or lower-cost power, you are invited to write to the Nordberg Mfg. Co., Milwaukee 7, Wis.

Street and Traffic Zone Markings

514. The Kelly-Creswell model produces clean, precise markings by a machine that incorporates pressure-cleaning mechanisms and air-actuated traction. Write to Kelly-Creswell Co., Xenia, Ohio, for detailed data.

Pipe Insulation Insures Efficiency

515. The Ric-Wil Company, Cleveland 14, Ohio, will send you upon request Catalog 44, containing full descriptions of insulation of steam, hot water, oil, and process-liquid pipes. Featuring specific insulation materials for each type, Ric-Wil products include base-drain and support, and tile and cast iron conduit. Scored for facile splitting and resealing, the conduit is interchangeable with standard equipment for compensation due to extra-heavy overhead loads.

Save Fire-Fighting Time

516. The 4-inch auxiliary suction hose that is a feature of the Mack fire truck saves valuable time and man-power in fire-fighting. A 1,000-gallon pumper, this truck embodies the latest techniques and equipment in its apparatus. For details of their various types of machines, write the Mack Manufacturing Corp., Fire Engine Dept., Empire State Bldg., New York 1, N. Y.

Cleaning Catch Basins

517. Orange-peel buckets are being used increasingly for cleaning sewer catch basins. To obtain the most practical information, indicate whether you want the bucket only or the bucket complete with operating machine, give dimensions of your catch basins, and indicate if sticks and branches are present. Write The Hayward Co., 34-38 Dey St., New York 7, N. Y.

pH Indicator

518. For news about a portable pH indicator that reads directly from the meter scale, get catalogue E 96 (2) from Leeds & Northrup Co., 4953 Stenton Ave., Philadelphia 44, Pa.

Versatile Loader Attached to Truck in Minutes

519. The Truk-Loder, adaptable for all models of trucks, can be attached or detached within a few minutes; there are just two bolts to insert. The loader can be used as a scoop, snow-plow, or refuse remover, or for handling poles and sewer pipe, making it particularly useful in municipal construction and maintenance departments. The Truk-Loder Co., P. O. Box 515, Tiffin, Ohio, will send you its folder of information.

Meter Repairs

520. The Neptune Meter Co., 50 West 50 St., New York 20, N. Y., will send you its manual, *Planned Meter Repair and Testing*, which contains a full explanation of modern methods and economy. An appreciable percentage of revenue is lost through faulty meters. Correct this condition, and you increase your revenue without increasing rates.

Sanitation Truck Compacts Refuse

521. By compacting refuse within the body of the truck, the Compactor Refuse-Getter is capable of handling larger loads and reduces the number of trips necessary. For full pictorial details of this machine that not only compacts refuse but acts mechanically to push it out at unloading, write to the Elgin Corp., 501 Fifth Ave., New York 17, N. Y.

Streamlined Boats and Cars For Amusement Parks

522. Rytecraft rides should attract a lot of attention in your city park. Write to the British Motor Boat Mfg. Co., Ltd., Brittainia House, Ampton St., London, W.C.1, England, for its booklet describing the Rytecraft scoota-boats, scoota-cars, and auto-scooters. Stable, easy to handle, modern in design and mechanism, both the cars and boats can be obtained to run on either gasoline or electricity.

Up-to-Date Police Radio

523. To get acquainted with the latest development in the new 152-162 megacycle radio equipment with low battery drain, write Fred M. Link, 125 W. 17 St., New York 11, N. Y.

Protect Shade Trees

524. The Bean Royal park sprayer is constructed especially for the purpose of protecting trees from insects and fungi. Specific data are available from the John Bean Mfg. Co., Division Food Machinery Corp., 9 Hosmer St., Lansing, Mich.

Safety for School Children

525. Since city officials as well as school board members are concerned with pupil safety, you may wish to get more information about a new, all-sound film entitled "Priceless Cargo." It is an 18-minute story of past perils and present progress in providing transport daily in school coaches for more than 4,500,000 children. The film is available free in either 16-mm or 35-mm size on request by letter to the Department of Safety Research, Superior Coach Corp., Lima, Ohio.

How and Where to Use A Small Chemical Feeder

526. The Milton Roy Co., 1300 E. Mermaid Ave., Chestnut Hill, Philadelphia 18, Pa., will send you upon request its catalog for the company's pumps, as well as an explanation of the working of the automatic control, valuable capacity selection tables, and tables of available materials of construction. The color diagrams will be of particular aid to engineers.

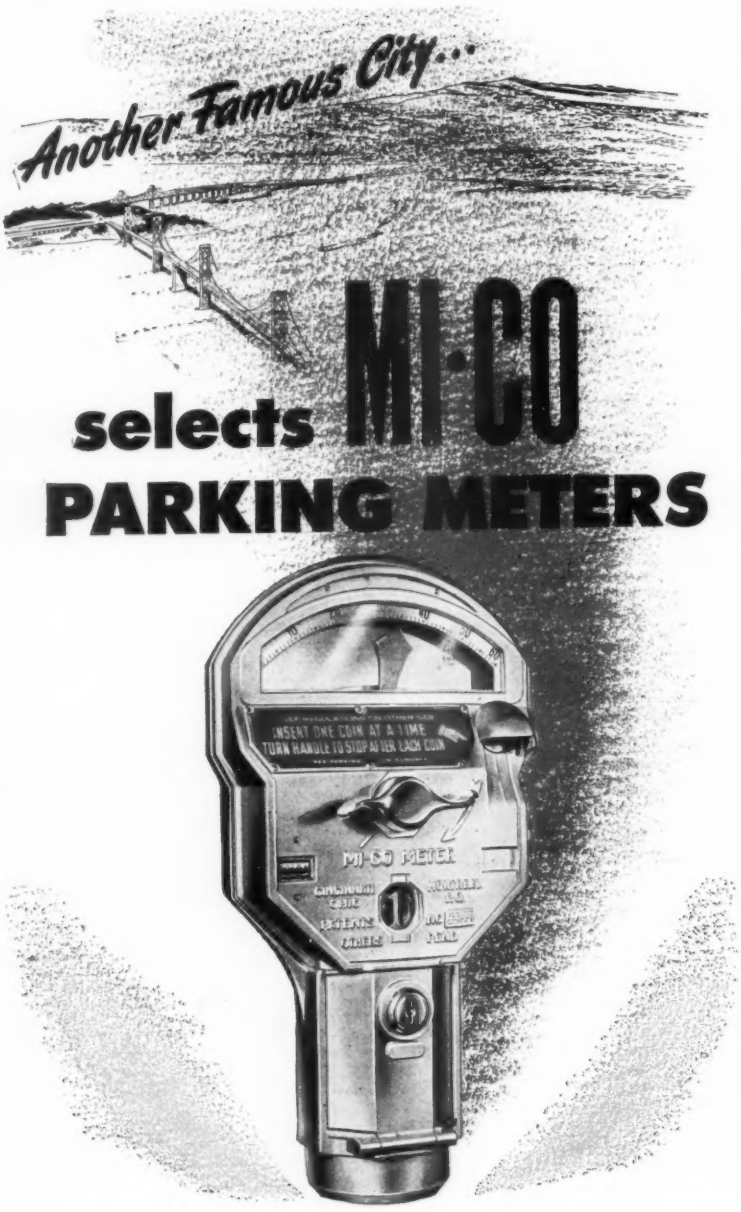
Attractive Fences Protect Your Property

527. For an illustrated folder describing the anchor features of perfectly aligned fences, write to the Anchor Post Fence Division, Anchor Post Products, Inc., Baltimore 24, Md. These fences can be securely inserted in walks or terraced lawns, and will be of particular value in municipal zoos and parks.

Some Steel Products Available

528. Despite unforeseen production difficulties, the steel you need may be available now at Joseph T. Ryerson & Son, Inc., Chicago, Ill. Write to the company for information and consultation.

(Continued on page 24)



This time it's Oakland, California. Before buying, Oakland officials subjected various makes of parking meters to exhaustive tests. After checking the results and studying case histories of MI-CO Meter performance in other cities, they selected MI-CO and placed an order with this company for 2000 meters. ¶The growing list of cities and towns installing MI-CO Parking Meters, and the performance records of meters in use for years, is proof of their dependability. They're designed and built to give the kind of service you expect, and at low upkeep costs. They do just that, and we have figures to prove it. MI-CO Parking Meters have the reputation of paying out quickly because they are seldom out of order. ¶Whether it's a village or a metropolis, if you are considering the metered plan of parking, be sure to include MI-CO in your investigation. Fully illustrated literature and case histories will be sent on request.

MI-CO METERS, 231 Court St., Covington, Ky.

Division of The Michaels Art Bronze Co., Inc., Covington, Ky.

Check and Mail

Use Coupon on Page 19

See These Street Markers Day and Night

529. Twenty-four hour visibility is the most important advantage of Prismo's highway-marking stripes. Bulletin 461 describes the additional advantages of this reflective traffic marking. For information about sign kits for reflectorizing sign posts, write to the Prismo Safety Corp., Municipal Division, Huntingdon, Pa., and ask for bulletin 244.

Versatile Loader For Year-Round Service

530. A new bulletin describing in detail the use of the Dozer Loader for removing snow, maintaining road surfaces, clearing landslides, collecting refuse, and sweeping streets has been prepared by the J. C. Plummer Co., 224 North Beachwood Dr., Los Angeles 4, Calif. The loader can be attached to any truck, is hydraulically operated, has a 2/3-yard capacity, and makes a complete cycle in 20 seconds.

Emulsified Asphalt Is Smooth and Economical

531. Write to the Bitucote Products Co., 1411 Central Industrial Dr., St. Louis 10, Mo., for a folder describing the multiple uses of emulsified asphalt—asphalt held in suspension in water by a small quantity of emulsifying agent. By this process, the asphalts are fluid to facilitate application and solidify on aggregates to form a strongly cohesive coat.

Submersible Pump Bulletin

532. The Pump Division of Byron Jackson Co. has just released a new 12 page bulletin on its deep-well turbine pump and electric motor unit, known as the "submersible pump". This unit operates entirely submerged in water at any depth, provides capacities of 7,000 gpm to 20,000 gpm, and works against heads of up to 1500 feet. For a copy, write to the Bulletin Dept. 46-5000, Byron Jackson Co., Box 2017 Terminal Annex, Los Angeles 54, Calif.

Steel Reservoirs for Water Storage

533. Steel reservoirs possess a permanence and minimal deterioration rate that make them advantageous for water storage. For details or for consultation about their erection, write to the Pittsburgh-Des Moines Steel Co., 3412 Neville Island, Pittsburgh, Pa.

Drive Gravel Plant to Construction Site

534. The Pitmaster Straightline has a capacity of up to 150 tons per hour in its production of aggregates, featuring interchangeable hopper and feeder. The horizontal vibrating screen of this portable crushing and screening plant permits close grading. The addi of a Cedarapids Portable Primary converts the gravel plant into a quarry plant. Specifications and descriptions of the types of plants are available to municipal officials from the Iowa Mfg. Co., Cedar Rapids, Iowa.

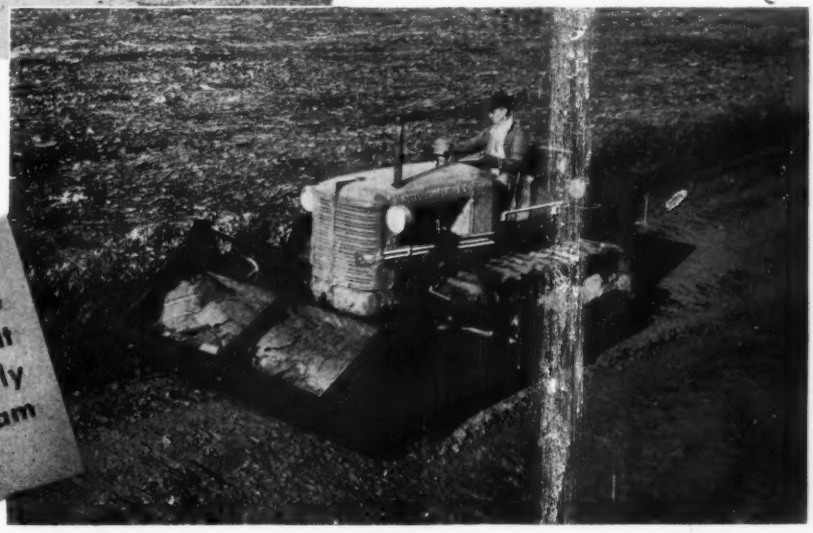
Keep Steel Water Tanks In Efficient Operation

535. If your city's steel elevated water tanks require cleaning and painting, The Universal Construction Co., 1158 W. 34 St., Indinanapolis 8, Ind.; or P. O. Box 1492, Birmingham, Ala., will send one of its representatives at your request with no obligation to you. This company also will paint large structures such as warehouses, smokestacks, mills.

(Continued on page 26)

WITH SPRING COME THE PESTS

Close That Open Dump! Don't Give Them a Chance to Breed and Multiply.



Get Started NOW on That Sanitary Fill You Have Been Planning . . . Built Efficiently, Economically with the Drott Bullclam Shovel.

FREE

Get the Complete Story! Send for This Book—"Answer To Your Waste Disposal Problems . . . With the Drott Bullclam Shovel."

Operated by DROTT POSITIVE CLOSED HYDRAULIC SYSTEM • SMOOTH • QUICK • DEPENDABLE. Keeps dirt and air out . . . keeps oil in! Used successfully on Drott equipment for many years.

DROTT
EQUIPMENT

DROTT MANUFACTURING CORP.
(FORMERLY HI-WAY SERVICE CORP.)
4344 N. GREEN BAY AVE. MILWAUKEE 12, WISCONSIN

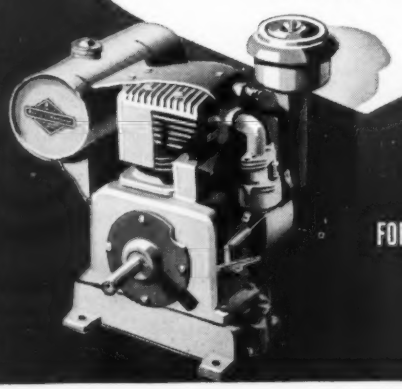
4 CYCLE
BRIGGS & STRATTON
GASOLINE ENGINES

Your Assurance of All that is Best in Gasoline Engine Performance

Through more than 27 years, Briggs & Stratton 4-cycle *air-cooled* gasoline engines have demonstrated they have the stamina to give *maximum performance* under severest conditions of long, hard use. By this record of *dependable* operation, they *earned* worldwide recognition as the "right power" for all types of appliances, farm machinery and industrial equipment. Only by specifying Briggs & Stratton engines can users, dealers and manufacturers benefit by the long experience, technical knowledge, and manufacturing facilities of an organization which has built over 2¾ million Single Cylinder *air-cooled* engines.

BRIGGS & STRATTON CORPORATION
Milwaukee 1, Wisconsin, U. S. A.

Air-Cooled Power



"Preferred Power"
FOR INDUSTRIAL, CONSTRUCTION RAILROAD AND FARM EQUIPMENT

Check and Mail

Use Coupon on Page 19

Keep Your Sewers Clean

536. Dual-locked sewer rods that form a rigid chain and can be coupled or separated on the job will enable the maintenance staff to clean and keep in efficient service your municipality's sewerage system. Write to the Expanding Sewer Machine Co., Nappanee, Ind., for its catalog explaining the sure-grip lock and its complete line of sewer-cleaning equipment.

Need Automatic Valve Data?

537. The new 4-page bulletin just issued by Golden-Anderson Valve Specialty Co., 1701 Keenan Bldg., Pittsburgh 22, Pa., tells about this company's water-pressure reducing valves, for use where uniform downstream pressure against a higher inlet head is required, and for high- and low-level water service. It also describes single-acting standard altitude valves, designed to maintain a uniform water level in tank, standpipe, or reservoir where a separate discharge line or by-pass arrangement is used for removing storage water; integral pilot-type cold-water float valves and water strainers that provide water free of silt, leaves, or other foreign matter.

Wide Size Range In Vertical Turbine Pumps

538. For literature about types and sizes in the Layne vertical turbine pump line, write to Layne & Bowler, Inc., Memphis 8, Tenn. Constructed to withstand greater strain than ever before called upon to encounter, the pumps give long, repair-free service.

Efficient Hydrants Easily Inspected

539. Ludlow hydrants are designed to facilitate inspection and servicing, yet municipal officials will find that they require little of either. Some of the features include shut-off without water hammer, as well as correct drainage to insure quick water flow. Write to The Ludlow Valve Mfg. Co., Inc., Troy, N. Y., for information about the Ludlow List 90 slide-gate hydrant.

Locate Underground Leaks

540. The A/H Leak Locator permits the location of leaks to become a purely mechanical process eliminating guess work and unnecessary digging. Ask for circular AC-2, describing the leak locator, pipe locators, dipping needles, and pipe phones. Write the Allen-Howe Electronics Corp., 150 Main St., Peabody, Mass.

These Street Flushers Can Do Many Other Tasks

541. The Etnyre street flusher cleans a swath up to 42 feet wide, regardless of parked cars or other obstacles. The machine can be used for other jobs—sewer cleaning, fire fighting, and tree spraying. E. D. Etnyre & Co., Oregon, Ill., will send you delivery schedules and price lists upon request.

High-Flow Sewer Pipe Yields Construction Economies

542. Transite sewer pipe has an exceptionally high flow capacity—n=.010—and this permits the construction of comparatively shallow trenches and smaller-diameter pipe. For detailed data explaining the economical installation, small infiltration rate, and pipe composition, ask for the Transite Sewer Pipe brochure from Johns-Manville, Box 290, New York 16, N. Y.

(Continued on page 28)

FWD..THE TRUCK FOR HEAVY DUTY

Why do FWD four-wheel-drive and six-wheel-drive trucks remain first choice of highway construction and maintenance men? Simply because no other type of truck equals the performance of FWDs in the MANY heavy-duty road jobs every FWD can do. See your nearest Distributor about the ONE TRUCK for MANY JOBS, or write to . . .

THE FOUR WHEEL DRIVE AUTO CO., Clintonville, Wis.
Canadian Factory: Kitchener, Ontario

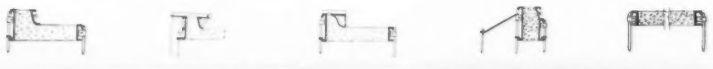
Average operating cost of only 24½c per mile is the record of a fleet of nine FWD Model SU trucks on road construction and maintenance for Douglas County, Nebraska.

America's **FWD** ***Foremost Heavy-Duty Truck***

Thousands of contractors have switched to Blaw-Knox Steel Forms, and find they get a high dollar return on their investment. Whether the job is city street, curb and gutter or sidewalk—it can be done quicker and cheaper with standard Blaw-Knox form set-ups.

Easy to handle in both placement and removal. Too, the steel imparts a smooth finish to the concrete, eliminating the hand-finishing necessary when expensive wood forms are tediously built for each job. These forms are always ready for action—to use again and again . . . For illustrated data on the complete line, write today for Catalog No. 1859.

BLAW-KNOX DIVISION
of Blaw-Knox Company
2102 Farmers Bank Building
Pittsburgh 22, Pa.



BLAW-KNOX CONSTRUCTION EQUIPMENT

Check and Mail

Use Coupon on Page 19

This Bucket Loader Works the Year Round

543. The Barber-Greene loader is a year-round machine, useful in the summer time for loading gravel, sand, soil, or coal, and in the winter as a highly efficient snow loader. The Model 548 has pneumatic tires and can be easily towed or driven to the job. Write for bulletins on the Model 548 and the 538—a crawler-mounted snow loader—to the Barber-Greene Co., Aurora, Ill.

Turn Sludge Gas Into Power

544. The Climax engines operate on sludge gas, at a cost of just ¼ of a cent per kwh. This tremendous saving in cost of operation is explained in bulletins distributed by the Climax Engineering Division, Climax Industries, Inc., Clinton, Iowa.

Planning to Make Concrete Pipe?

545. The Quinn pipe forms can be obtained in sizes from 12 to 84 inches, in any length for tongue-and-groove or bell-end pipe. Write for information, prices, and estimates on the pipe forms and for mixing formulas to the Quinn Wire & Iron Works, 1623 12 St., Boone, Iowa.

These Compressors Work Well in Any Weather

546. The complete water jacketing of cylinders in the Gardner-Denver portable air compressors yields a mechanism that is impervious to either extreme heat or cold. For complete information, write to the Gardner-Denver Co., Quincy, Ill.

Air-Cooled Gasoline Engines

547. The high effectiveness of Briggs & Stratton air-cooled engines is available for any gasoline-powered machine. Their high standards of manufacture insure trouble-free service, and their repair part stock is complete For complete data, write to the Briggs & Stratton Corp., Milwaukee 1, Wis.

Improved Street Lighting

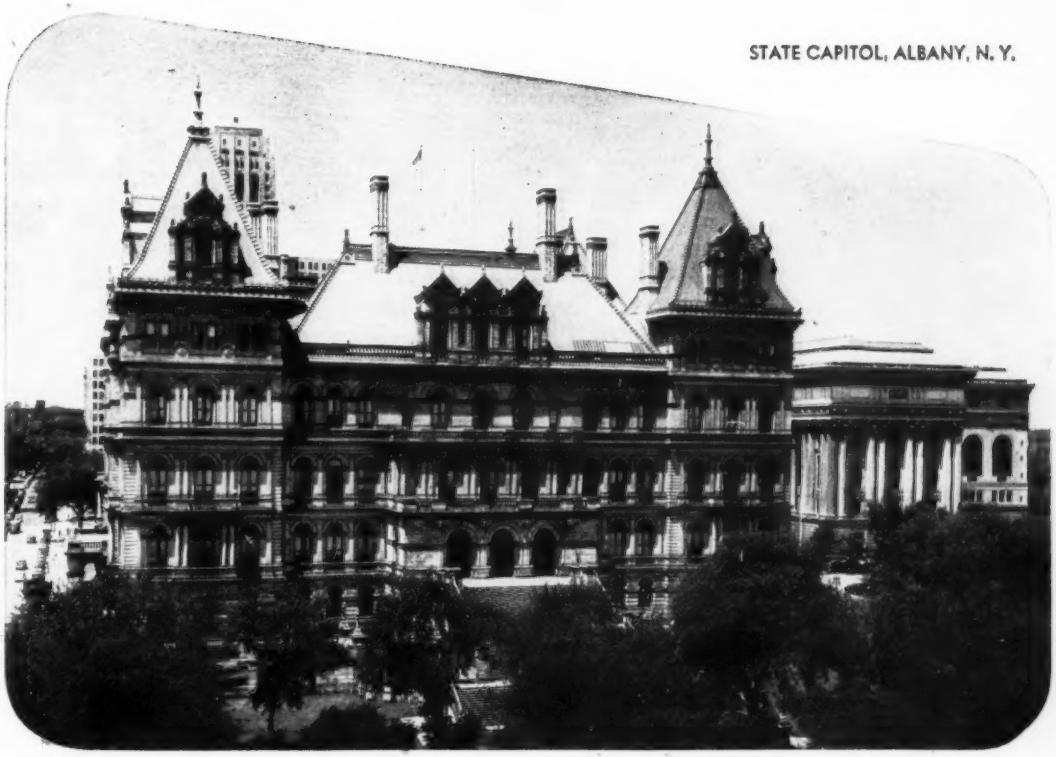
548. The Upsweep bracket standard on the Union Metal lighting poles does three things for your community: primarily, it increases and improves distribution of light, simplifies wiring, and makes more attractive fixtures. Write the Union Metal Mfg. Co., Canton 5, Ohio, for a catalog and design details.

Demountable Body For Refuse Collection

549. The Dempster Dumpster, manufactured by Dempster Bros., Inc., 327 Springdale, Knoxville 17, Tenn., is an innovation in refuse collection. The basic idea is that of variable-size truck bodies which serve as refuse-collecting bins which when filled are picked up for dumping by a hoisting unit. Write for details and illustrations.

Factory-Greased Tractors Cut Maintenance Costs

550. Allis-Chalmers crawler tractors are all grease-packed in the factory. What does this mean? Simply that the lubricant in your tractors need be replenished no more frequently than every 1,000 hours—or about every six months. This is a great aid in reducing maintenance costs. For details, write Allis-Chalmers, Tractor Division, Milwaukee 1, Wis.



STATE CAPITOL, ALBANY, N. Y.

HIGHER EFFICIENCY

WINS IN NEW YORK STATE

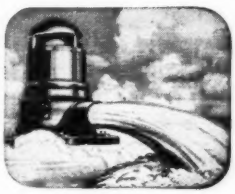
Cities, processing plants and manufacturing firms throughout the state of New York now own more than three hundred and twenty-five Layne high efficiency Well Water Systems. These individually designed, quality built and correctly installed water systems are now producing millions of gallons of water daily at an amazingly low cost.

Into all Layne Well Water Systems only the very finest quality materials have gone, thus providing the absolute maximum in long life with a minimum of upkeep cost.

Layne Well Water Systems and Vertical Turbine Pumps possess many distinctive and definitely superior features that have been developed and thoroughly proven by Layne. Engineers the world over readily recognize Layne Well Water Systems as being the best that money can buy.

For further information, catalogs, bulletins, etc., address

LAYNE & BOWLER, INC.
General Offices, Memphis 8, Tenn.



PUMPS For
Wells—Lakes—Rivers—Reservoirs—Irrigation Projects

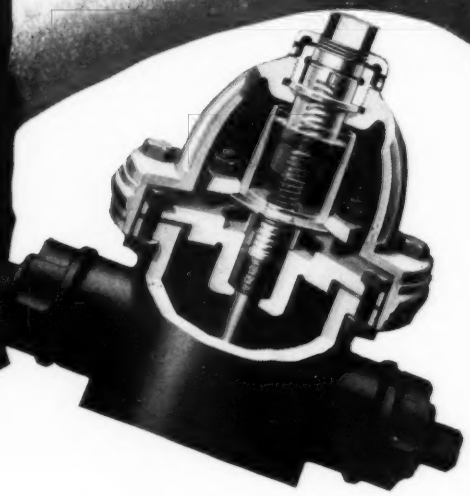
—are obtainable in sizes from 40 to 16,000 gallons per minute, powered by electric motor, V-belt or angle gear drives. Write for Pump Catalog.

LAYNE

WELL WATER SYSTEMS
VERTICAL TURBINE PUMPS

AFFILIATED COMPANIES—Layne-Arkansas Co., Stuttgart, Ark. ★ Layne-Atlantic Co., Norfolk, Va. ★ Layne-Central Co., Memphis, Tenn. Layne-Northern Co., Mishawaka, Ind. ★ Layne-Louisiana Co., Lake Charles, La. ★ Louisiana Well Co., Monroe, La. ★ Layne-New York Co., New York City ★ Layne-Northwest Co., Milwaukee, Wis. ★ Layne-Ohio Co., Columbus, Ohio. ★ Layne-Pacific, Inc., Seattle, Wash. ★ Layne-Texas Co., Houston, Texas ★ Layne-Western Co., Kansas City ★ Layne-Western Co. of Minn., Minneapolis, Minn. ★ International Water Supply, Ltd., London, Ontario, Canada ★ Layne-Hispano Americana, S. A., Mexico, D. F.

Control!



YOUR MAINTENANCE COSTS WITH THIS SELF OILING FEATURE

It costs hard, cold dollars to constantly make the rounds to oil hydrants—a needless expense that you can eliminate, as the MUELLER-COLUMBIAN Hydrant OILS ITSELF!!!

The unique construction of the Dry Top Bonnet Section utilizes an oil reservoir that keeps all working parts constantly immersed in an oil bath. No corrosion, no binding of parts, and easy, quick operation every time. Ask any Mueller Representative for full details, or write direct.

DEPENDABLE SINCE 1857 FULLY WARRANTED OUR 90th YEAR

MUELLER CO.

MAIN OFFICE AND FACTORY.....DECATUR, ILLINOIS
OTHER FACTORIES: *Los Angeles, Cal.; Chattanooga, Tenn.; Sarnia, Ont. Canada*

MEASURING UP TO Expectations SPECIFICATIONS

All cold water meters must conform to standard specifications for accuracy established by the American and New England Water Works Associations. Any meter will meet these specifications when new. Some, like Empire meters, will exceed minimum accuracy requirements for new meters. But it's impossible to specify performance *after* the meter has been put in service and that's where true values are disclosed.

Empire meters, with their exclusive balanced oscillating piston construction, have a 63 year service record for superior performance. Extremely accurate when new, they will maintain initial accuracy for longer periods than any other design. Too, Empires are dependable in service. You can depend upon them for sustained accuracy and you can depend upon them for freedom from sticking and stopping. And you just can't beat the Empire for maintenance economy. Consider all the Empire advantages. You'll find they measure up to your expectations for the best in meter value. *Write for catalog.*

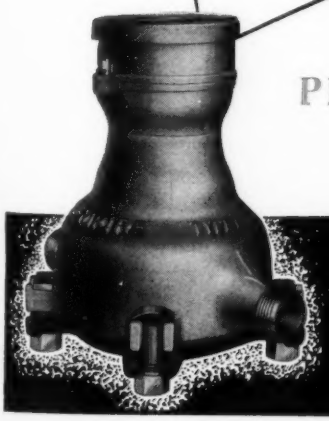
PITTSBURGH EQUITABLE METER DIVISION
Rockwell Manufacturing Company
Pittsburgh 8, Pa.

Atlanta Boston Chicago New York Pittsburgh ROCKWELL Houston Kansas City Los Angeles San Francisco Seattle Tulsa

Empire Balanced Oscillating Piston in Snap Joint Measuring Chamber

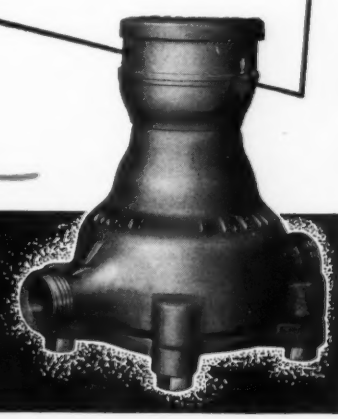
Here is the reason for Empire meter accuracy and dependability — the exclusive *balanced* oscillating piston construction that sets these meters apart from all others. This piston is so light it almost floats. Even minute flows will push it ahead rather than try to escape around it. The slightest dribble will move this featherweight piston and make it measure accurately. Its unique gliding action with bearing surface evenly distributed over the entire piston circumference reduces friction and wear to a minimum.

PITTSBURGH-EMPIRE
Water Meters



EMPIRE TYPE 12
Frost protected model with bronze case and breakable cast iron bottom plate
Described in Bulletin W-802

EMPIRE TYPE 14
All bronze model for use in warm climates
Described in Bulletin W-801



3,000 MORE NEW AIRPORTS NEEDED

America needs more than 3,000 new airports constructed and more than 1,600 existing ones improved, according to the national plan of the Civil Aeronautics Administration.

These airports can be constructed more efficiently and economically on the one-contract, one-responsibility basis of awarding contracts to experienced and competent contractors.

These contractors may be identified by the Associated General Contractors of America, Inc. emblem.

THE ASSOCIATED GENERAL CONTRACTORS · OF AMERICA · A G C REG. U.S. PAT. OFF. SKILL INTEGRITY RESPONSIBILITY

This advertisement is No. 12 of this series

THE ASSOCIATED GENERAL CONTRACTORS *of* AMERICA, INC.

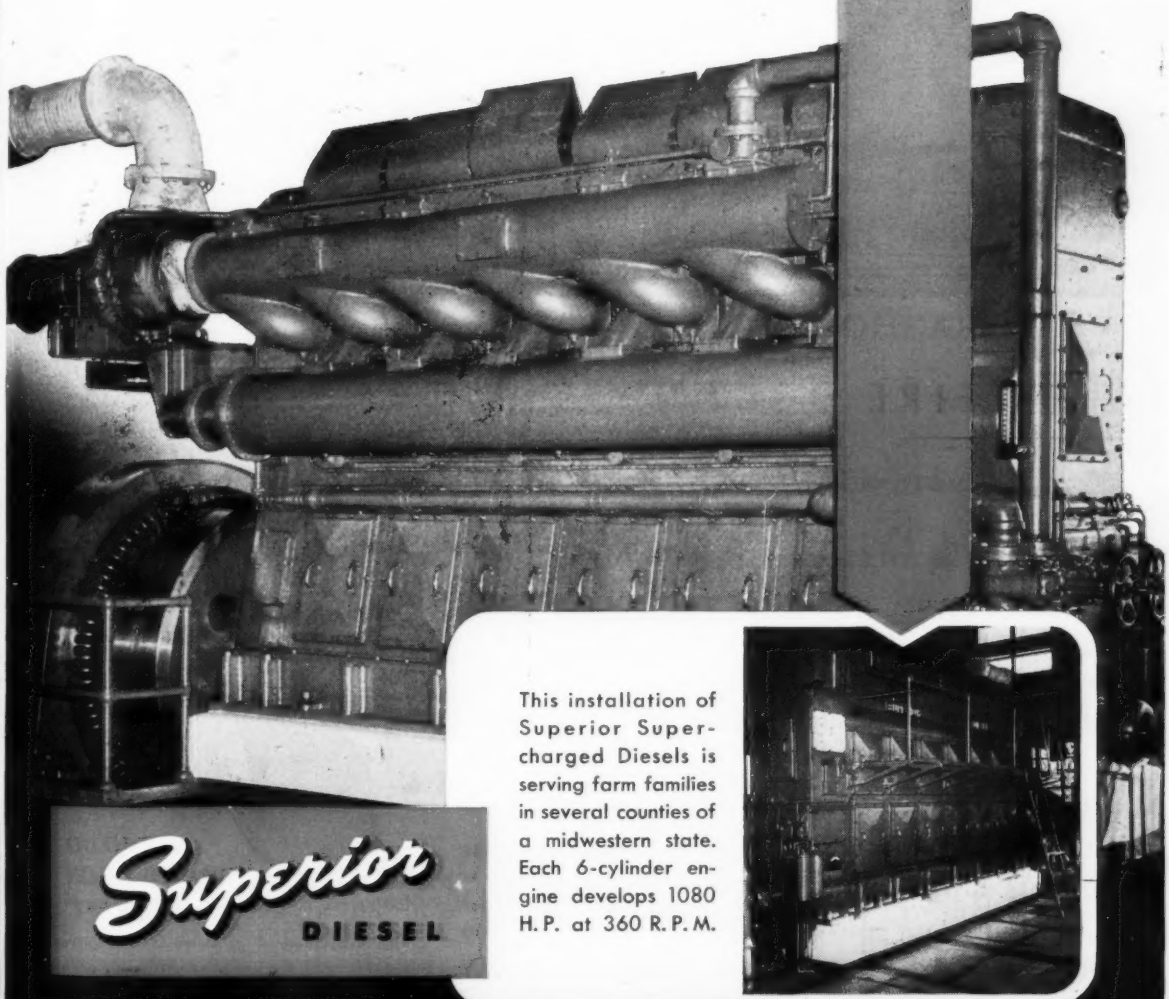
One hundred Chapters and Branches throughout the Country
National Headquarters—Munsey Building, Washington 4, D. C.

SKILL, INTEGRITY AND RESPONSIBILITY IN CONSTRUCTION OF BUILDINGS, HIGHWAYS, RAILROADS, AIRPORTS AND PUBLIC WORKS

FOR *Sure Starts*

BUY A SUPERIOR DIESEL ENGINE

Superior Diesels are started easily by compressed air—the dependable system universally accepted and used by the Diesel industry for many years. The distinguishing feature of the Superior system is the use of an air starting valve for each cylinder, with overlapping timing so that one or more cylinders will always be receiving starting air while in a turning position, which eliminates dead centering. Admission of starting air to all cylinders, combined with effective fuel spray and proper compression ratio, results in quick engine turnover and rapid firing.



Superior DIESEL

This installation of Superior Supercharged Diesels is serving farm families in several counties of a midwestern state. Each 6-cylinder engine develops 1080 H. P. at 360 R. P. M.

SUPERIOR ENGINES DIVISION OF THE NATIONAL SUPPLY CO., PLANT AND GENERAL SALES OFFICE: SPRINGFIELD, OHIO

XUM

Delayed Alarms

CAUSE FIRE DISASTERS

WHEN FIRE OCCURS—

PULL A FIRE ALARM BOX

IMMEDIATELY!

"It is generally recognized that there is no other thoroughly satisfactory means of sending and receiving fire alarms than an approved fire alarm telegraph system. Telephones should not be relied upon to replace needed boxes nor to supplement any inadequacy in number or location of boxes."

—National Fire Protection Association

DETAILED INFORMATION ON REQUEST

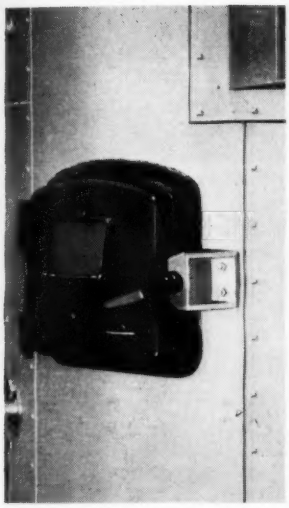
THE GAMEWELL COMPANY

NEWTON UPPER FALLS 64, MASSACHUSETTS

IN CANADA—NORTHERN ELECTRIC COMPANY, LTD., MONTREAL

Don't!

OPEN THE DOOR, RICHARD!*



No, Richard doesn't have to open the door if he's the operator of a modern Nichols MONOHEARTH Mechanically Stoked Refuse Incinerator.

Opening doors leads to a lot of back-breaking LABOR on old style manually stoked incinerators.

Let a fractional H. P. motor do the work. Make your new† refuse incinerator a MONOHEARTH, the Modern, Mechanically Stoked incinerator.

†Or modernize your existing incinerator by installing a Nichols Monohearth cone and stoking arms.

*Courtesy of Duchess Music Corporation, copyright 1947.

NICHOLS ENGINEERING & RESEARCH CORP.
60 WALL TOWER
NEW YORK 5 · NEW YORK
UNIVERSITY TOWER BUILDING, MONTREAL, CAN.

"99-H" POWER GRADER—Exclusive All-Wheel Drive and All-Wheel Steer plus High-Lift Blade, Extreme Blade Reach and Completely Reversible Blade guarantee superlative performance on every job.

NO. 55 MOTOR GRADER—Engineered to handle a wide variety of maintenance and light grading jobs quickly, easily, and economically. May be had with scarifier attachment.

BADGER SHOVEL—Convertible to crane, dragline, piledriver, trench hoe, and skimmer. ¾-swing design has many operating advantages.

MODEL "40" PATROL SWEEPER—Available with right-hand or left-hand gutter broom, or both. Rear broom throws dirt directly into hopper. May be had with Leaf Broom attachment.

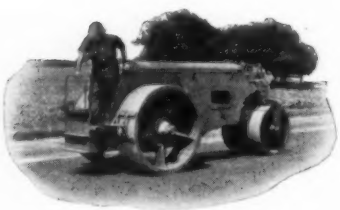
BUILT *to* OUTPERFORM

"Plus values" built into every Austin-Western machine . . . exclusive features that save time and money by getting the job done better and quicker . . . engineering experience dating back to the first crude Austin-Western tools of 1859, culminating in the new Power Grader and Street Sweeper models shown on this page, and other new models not yet in production.

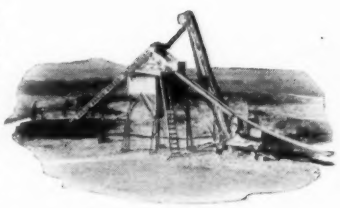
Your nearby A-W Distributor is an especially good man to know in these days of postwar changes and developments.

AUSTIN-WESTERN COMPANY, AURORA, ILLINOIS, U. S. A.

TANDEM ROLLERS—Made in 2 sizes—5 to 8-Ton and 8 to 10½-Ton. The variable weight feature enables one machine to handle a wide variety of work.



3-WHEELED ROLLERS—Made in sizes ranging from 6 to 12 tons. Gasoline or diesel engines. Hydraulic power steer. Hydraulic scarifier attachment.



PORTABLE CRUSHING PLANTS—Range in size from that illustrated to the magnificent Triple Unit Plant with its Primary, Secondary and Reduction Crushers.

STATIONARY CRUSHING PLANTS—Engineered to meet individual requirements; employing any desired combination of Crushers, Conveyors, Screens and Bins.

BUILDERS OF ROAD MACHINERY

Austin Western

SINCE 1859

some places they say . . .

"a Real Worker"

. . . but everywhere they say

"MODERNIZE WITH Macks!"

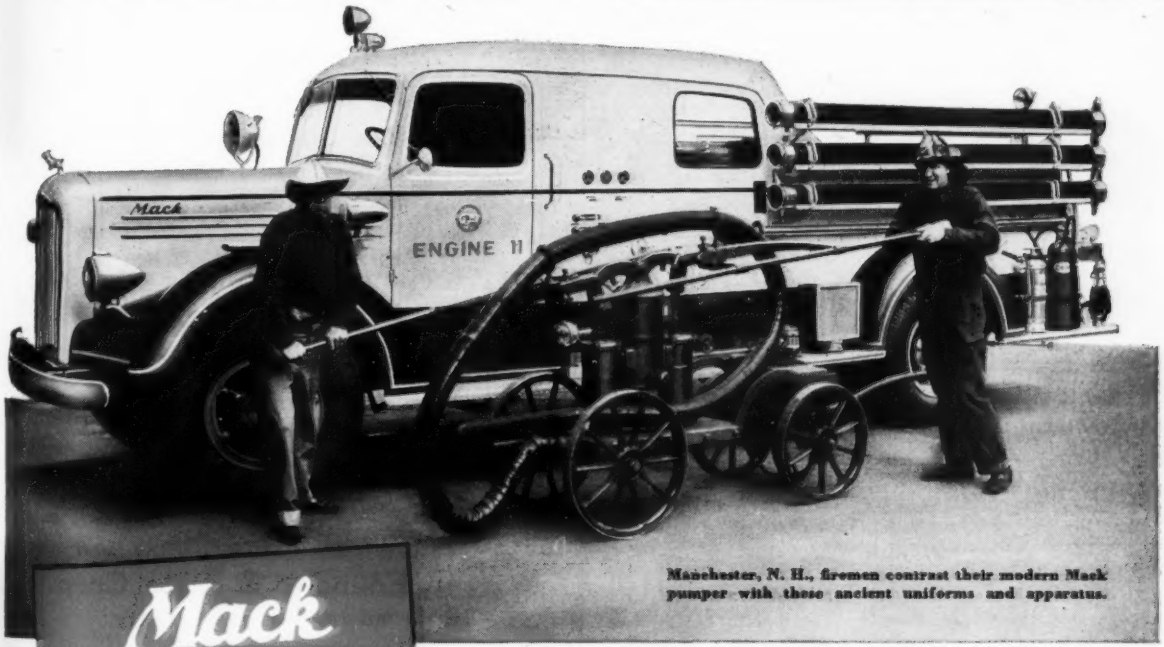
"A real worker" in some fire departments means a fire that is really going. It's a job that will make extreme demands on men and equipment. And on fires like this, over 1,000 departments know that they can rely on Macks.

But firemen know also that most of these workers can be knocked out faster with earlier alarms, quicker response. Here's where they appreciate the unfailing dependability and fast road speeds that they get from Mack fire engines. They know that Mack's modern design gives them the necessary quick starts and stops that modern traffic conditions require.

This superior performance comes from Mack's 37 years of experience in applying its unrivalled resources to the fire engine field. It is furthered by progressive engineering policies which have enabled Mack to pioneer many of the most basic improvements in fire apparatus. And it is maintained by the country-wide availability of 67 direct Mack factory branches.

Large or small, every department needs to replace obsolete equipment with the best in modern fire apparatus. To make your replacement program fully effective, *Modernize with Macks!*

Firefighters have developed a colorful phraseology over the course of years. Many of these terms vary in different parts of the country. Mack is presenting a series of these expressions with the feeling that they may be of interest to firemen everywhere. Send us *your* "way of saying it."



Manchester, N. H., firemen contrast their modern Mack pumper with these ancient uniforms and apparatus.

Mack
FIRE APPARATUS

MACK MANUFACTURING CORPORATION
Fire Engine Division, Long Island City 1, New York

TRIPLE COMBINATION PUMPERS — 500 TO 1250 GALLONS • SQUAD WAGONS • CITY SERVICE AND QUADRUPLE COMBINATION LADDER TRUCKS

BEST ROAD SPREADER

Say Men who Build and Maintain Highways

- Spreads all materials to 1", wet or dry
- Spreads thick or thin
- Attaches to truck as tailgate
- Does not limit use of truck to spreading
- Controlled from cab with clutch
- Starts spreading with truck in motion
- No helper required
- Stops spreading with truck in motion
- Spreads forward or backward
- Half or full width of street
- Reduces number trucks required
- Positive uniform spread
- Fits any dump truck

SELF-FEEDING FLINK

Flink Spreader with safety protective housing over spreader blades and clutch. Hydraulic drive and rear wheel chain drive models.

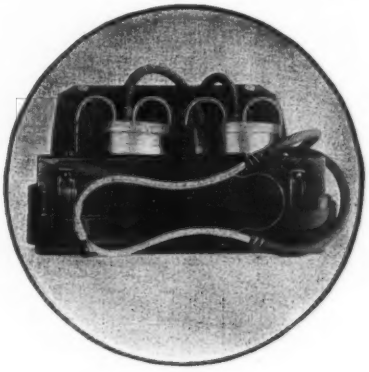
Sand-Chip Attachment

The ideal machine for seal coating, road re-surfacing, dust control. Trouble-free, no working parts to attachment. Write.

Write for literature or name of distributor near you

THE FLINK COMPANY, Dept. 6 Streator, Ill.

A "Bull's Eye" every time



A/H LEAK LOCATOR

When hunting leaks, you need not be an expert marksman if you use the A/H Leak Locator. Just place it in contact with the earth, put on the ear-phones, and the A/H Locator will lead you to that underground leak in a jiffy. No hit-and-miss excavating, no unnecessary resurfacing of the street. Price complete with carrying case and strap: $75.00.

pipe locators	dipping needles	pipe phones
$100.00	$17.50	$3.70

Write for circular AC-3

ALLEN-HOWE ELECTRONICS CORP.
150 MAIN ST. PEABODY, MASS.

Cast Iron Pipe

PLAIN CAST OR SPUN CENTRIFUGAL

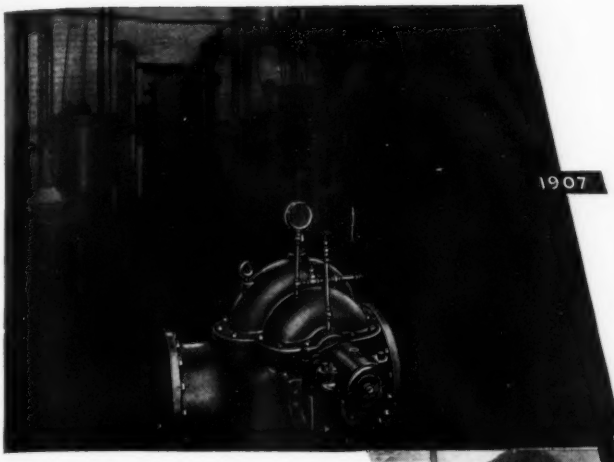
Cast Iron Pipe and Special Castings, Bell and Spigot, Flange, Flexible Joint, Culvert, Milled and Plain End Tubes, Cylinders, Flanged and Bell and Spigot Fittings, High Pressure Fire Service Pipe, Warren Short Body Specials, Threaded End Pipe.

Size 2 to 84-inch

Pipe manufactured in accordance with standard specifications adopted and approved by water works associations and engineers.

Warren Foundry & Pipe Corp.
11 Broadway, New York City

Warren Pipe Co. of Massachusetts
75 Federal Street, Boston, Mass.

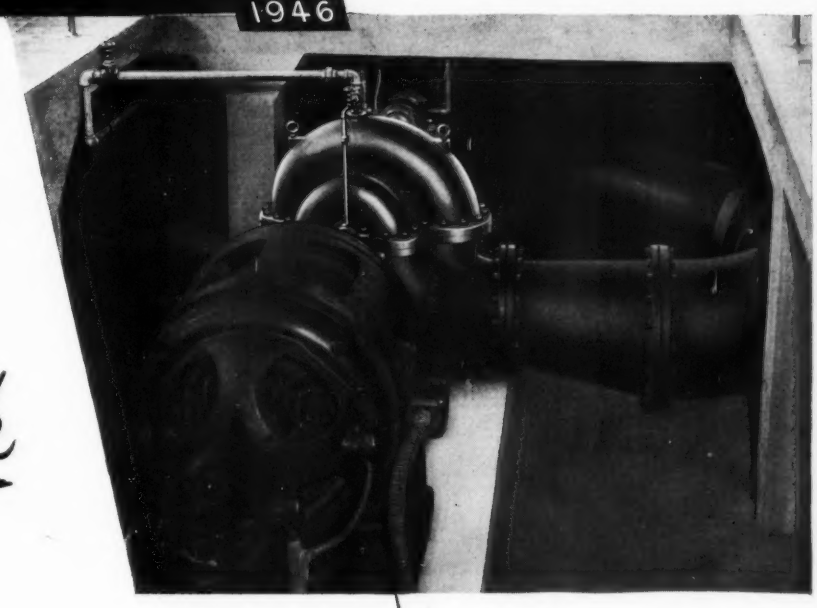


Sustained Efficiency Year after Year

De Laval geared, turbine-driven, dual pumping unit installed at the Moore's Bridge Pumping Station in 1907.

Brings Repeat Orders Year after Year

A recent installation at Moore's Bridge Station, a 15 mgd, 165 foot head, De Laval unit.



DE LAVAL PUMPS AT *Norfolk*

The City of Norfolk, Virginia, is served by a total of 20 De Laval Water Works pumps, all of which have rendered exceptionally satisfactory, trouble-free and efficient service. In fact, the very first installation, a De Laval geared turbine-driven pumping unit, installed at the Moore's Bridge Station in 1907, is still going strong after 39 years of use.

In Norfolk and elsewhere, De Laval pumps have been noted for the maintenance of high efficiency year after year, a characteristic resulting in a large measure from the use of De Laval Labyrinth wearing rings which minimize internal leakage from discharge to suction while at the same time permitting ample clearances but little affected by wear.

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DE LAVAL

DE LAVAL STEAM TURBINE COMPANY • TRENTON 2, N. J.

WW-1

TURBINES • HELICAL GEARS • WORM GEAR SPEED REDUCERS • CENTRIFUGAL PUMPS • CENTRIFUGAL BLOWERS AND COMPRESSORS • IMO OIL PUMPS

ALL AROUND AND UNDER THE TOWN

THEN *and* NOW

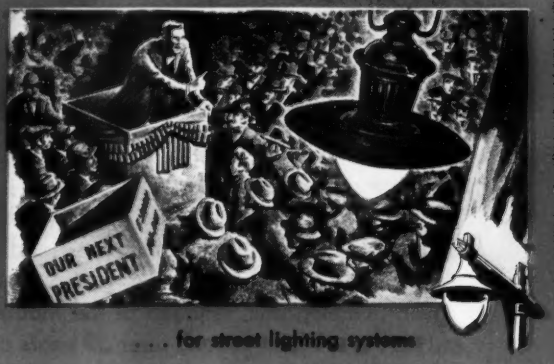
HAZARD MUNICIPAL CABLES ON THE JOB

. . . are providing long and trouble-free service . . . helping city engineers in their ever continuing efforts to bring new improvements to their communities . . . making sure that new plans and installations are a sound investment for the future. The Hazard Insulated Wire Works, Division of The Okonite Company, Wilkes-Barre, Pa.

. . . for fire alarm systems

. . . for traffic signals

. . . for police alarm systems



. . . for street lighting systems

. . . for airport lighting

Performite super-aging insulation has been standard for municipal underground and aerial signal cables since 1932.

Hazard Armortite Cable is a non-metallic sheathed cable for direct burial . . . has an outstanding record of performance.

Hazaprene Cable, insulated with rubber and then encased in a Hazaprene sheath, resists oil, acids, chemicals, heat.

HAZARD

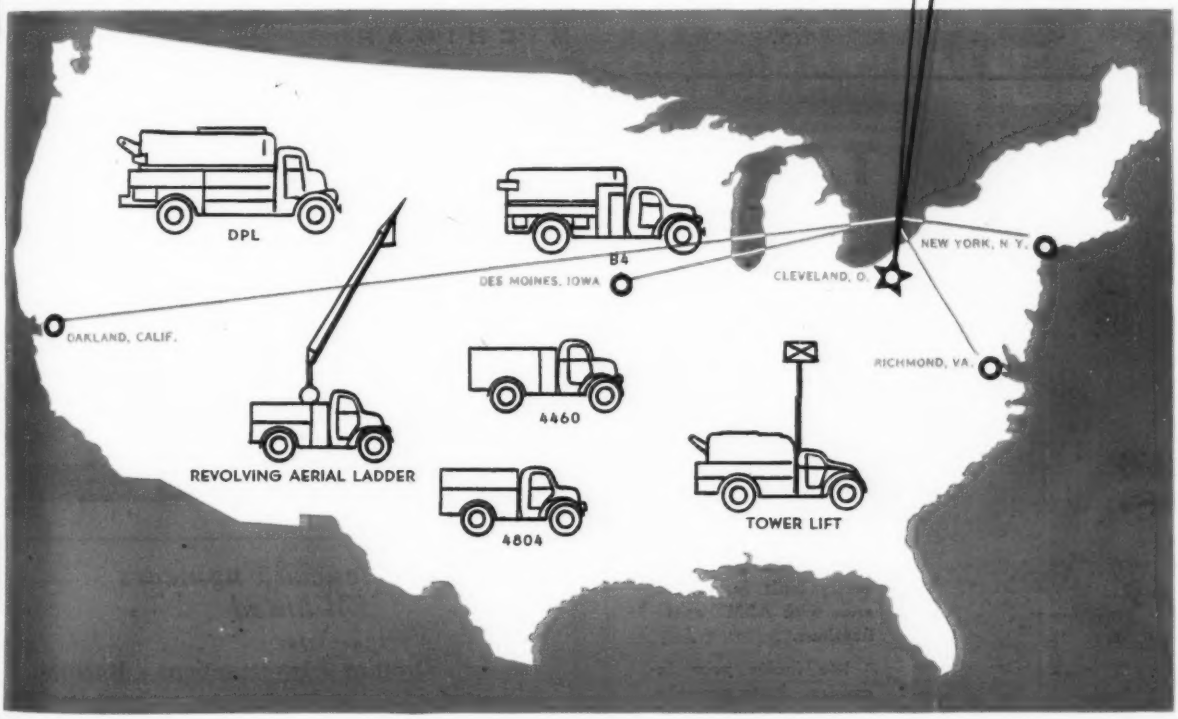
insulated wires and cables for every electrical use

in all parts of the country

● To improve our service to you, The American Coach & Body Company has established sales offices in Des Moines and New York; sales and assembly plants in Oakland and Richmond.

● When you need information on American bodies, ladders or Tower Lift, you can save time by addressing the nearest office to you.

Write for factual literature on American bodies, ladders, or Tower Lift. Sent promptly upon request.



ACB

THE *American* COACH and BODY COMPANY

9503 WOODLAND AVE., CLEVELAND 4, OHIO

SALES and ASSEMBLY THE AMERICAN COACH AND BODY CO OF CALIF., 432 FIFTH ST., OAKLAND 7, CALIF
BAKER EQUIPMENT ENGINEERING CO., SUMMIT & NORFOLK STS., RICHMOND 11, VA

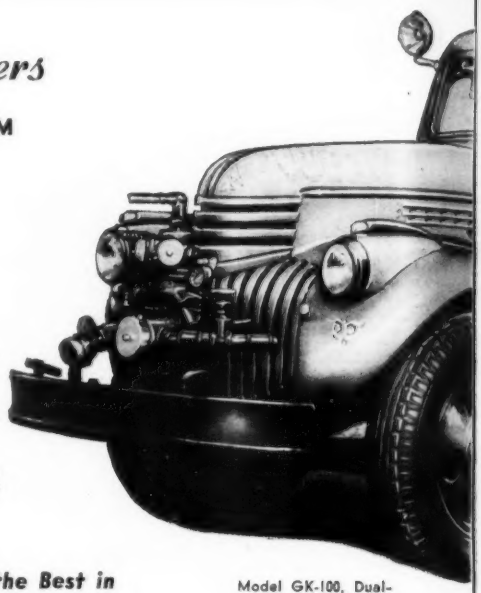
OFFICES 350 MADISON AVE., NEW YORK 17 N Y INSURANCE EXCHANGE BLDG., DES MOINES 9, IOWA

Here Are Your Answers

TO THE FIRE FIGHTING PROBLEM

First **CONVERT FIRE TRUCKS NOW IN SERVICE**
In just a few hours you can install the BARTON-AMERICAN front-mounted, dual-purpose, centrifugal pump that delivers either a solid stream or fog spray.

Second **NEW TRUCKS COMPLETE**
BARTON-AMERICAN Fire Trucks are made to meet and exceed all Underwriters' requirements. You have your choice of any commercial chassis. Available in several models.



WRITE TODAY for full information. Our representatives will call at your request.

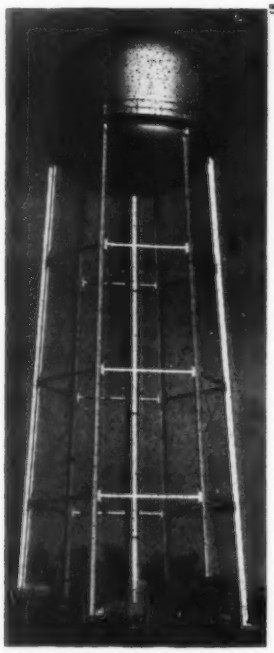
When You Want the Best in
PERFORMANCE, ECONOMY AND DURABILITY

Model GK-100, Dual-Purpose, Gear Driven, Front Mounted, Centrifugal BARTON-AMERICAN Fire Pump.

AMERICAN-MARSH PUMPS, INC.

BATTLE CREEK, MICHIGAN

AMERICAN-MARSH PUMPS



TANKS

For over 80 years, Cole elevated tanks have been helping provide uniform water pressure, fire protection and adequate water reserve in scores of American cities.

Capacities 5,000 to 2,000,000 gallons — with hemispherical, ellipsoidal or conical bottoms. Also flat tanks for storage of butane and propane gas. Correctly built in accordance with ASME specifications.

We invite your inquiries. State capacity, height to bottom, and location.

R.D. COLE MFG. CO. Newnan, Ga. ESTABLISHED 1856

NO "LEAN YEARS" FOR WEEDS!

Order Your Supply of Weed-Killer *NOW*

DOLGE WEED-KILLER

Does a swift, efficient job where *no vegetation whatever* is desired. This Dolge-developed preparation kills weed tops, then penetrates to the roots, destroying the plants completely. It sterilizes the soil and prevents seeds from sprouting.

An hour's sprinkling with DOLGE WEED-KILLER equals six hours of weeding by old-fashioned, unsatisfactory methods. Do the job once and do it *right* at a terrific saving of money.

E. W. T. *SELECTIVE* WEED-KILLER

Acts on weeds but is not injurious to most grasses, nor does it sterilize most soils. One cupful to eight gallons of water is the usual solution for ridding turf areas of dandelions, plantains and other hardy weeds.

Non-poisonous to humans and domestic animals . . . will not corrode metal sprinkling and spraying equipment. Use freely on roadsides to control poison ivy. Use for ragweed control.

Write for complete literature, with full directions for applying these tested Dolge products.

The C. B. DOLGE CO. WESTPORT, CONNECTICUT

Experienced Engineers Wanted

for

Design • Drafting • Investigations • Reports

on

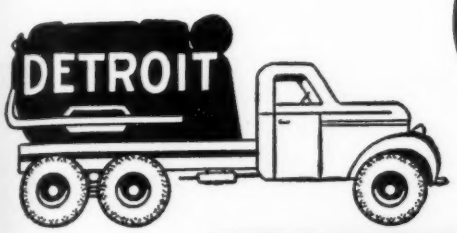
Water Sewage and Industrial Waste Treatment Projects. Salaries in Accordance with Experience and Qualifications. A Number of Key Positions Open for Top Notchers.

LOCATION IN THE EAST

Write Box #268

The American City
470 Fourth Avenue, New York 16

AN *Important New* NAME TO REMEMBER



manufacturers of products you already **KNOW** *are* **BEST**

Converts Medium Trucks to Heavy Duty Six-Wheelers

Automatic Locking for Truck Axles

This is another way of telling you that

THORNTON TANDEM CO.

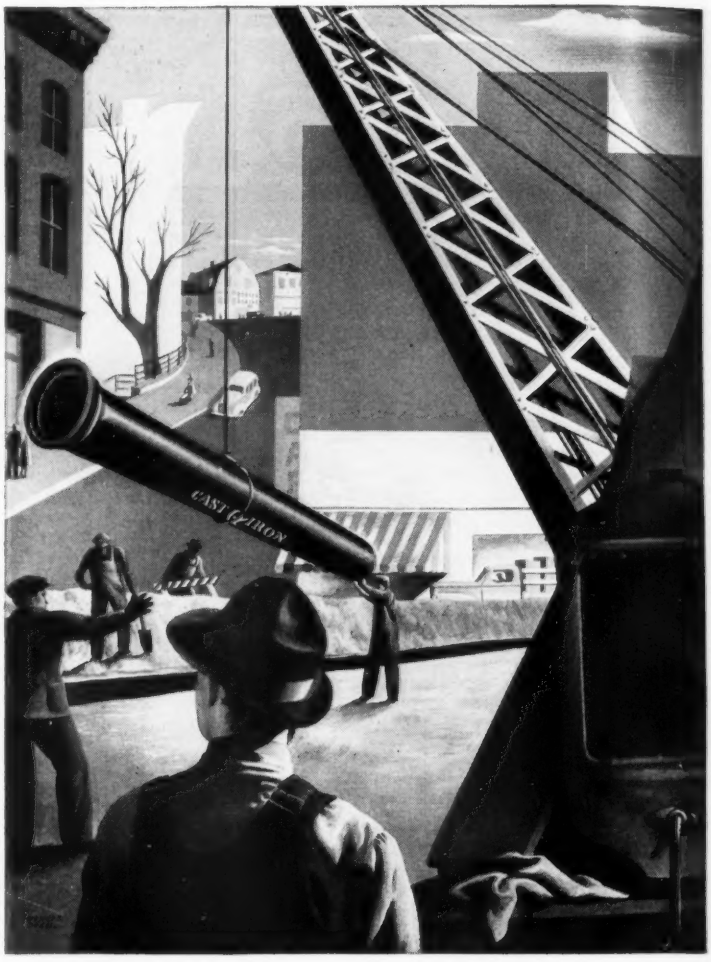
has changed its name to

DETROIT AUTOMOTIVE PRODUCTS *Corporation*

8701 GRINNELL AVE. DETROIT 13, MICHIGAN

Distributors: *in U.S.A.,* **TRUCKSTELL DISTRIBUTORS;** *Export,* **HERTHORNWAY EXPORT CORP.**

NOW THE FIRST 100



In Boston, New York, Philadelphia, and other large cities, cast iron mains are still functioning after more than a century of efficient service. They were laid in the days of horse-drawn vehicles. They were made in the days of rule-of-thumb methods.

They did not have to share the underground with electric power, steam and telephone conduits, sewers and subways. There were no skyscrapers or ten ton trucks. Yet there are more than a score of century-old cast iron mains which have survived stresses, undreamed-of when they were made and laid, that are still rendering efficient service. Certainly the first hundred years of the cast iron water main, laid in Philadelphia in 1822, were not the easiest.

By comparison, cast iron pipe as made today under scientific metallurgical and production controls, and installed by modern equipment and methods, can be confidently expected to live up to the statement in the headline of this advertisement. For cast iron pipe, as it is made and laid today, the first hundred years are now the easiest. Barring abnormal soil conditions, cast iron pipe offers centuries of efficient service.

And by efficient service is meant:

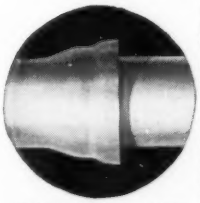
CAST IRON PIPE

YEARS ARE THE EASIEST

"Cast iron pipe not only offers a century or more of efficient life as a structure—it offers a century or more of efficient life as a carrier. In the limited areas with tuberculating waters, cement-lined cast iron pipe is tuberculation-proof and insures high carrying capacity for the life of the pipe. In the greatly predominating areas without tuberculating waters, the carrying capacity of unlined cast iron pipe remains practically unimpaired for the life of the pipe."

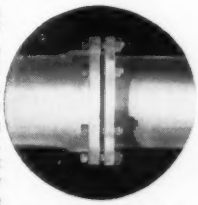
Under the auspices of the American Standards Association, sponsored by the American Water Works Association and other pipe-using organizations, required strengths and thicknesses of cast iron pipe have been computed to meet specific service conditions—the result of a decade of research. For cast iron pipe made a century ago, the first 100 years were the hardest. For cast iron pipe as produced today, there is every reason to believe that the first 100 years will be the easiest.

Joints for Cast Iron Pipe



Bell-and-Spigot Joint: the standard joint for water and sewerage service.

A variety of joints are available, of which the two most widely used are illustrated. Special purpose joints, such as the Ball-and-Socket, or Flexible Joint for underwater use, and the Flanged Joint for above-ground use, are also available.



Mechanical Joint: bottle-tight and flexible, now with interchangeable parts.

PUBLIC WATER SUPPLY —the Forgotten Industry

The public takes piped running water for granted—until it's turned off. A good public water supply is never news—except on the rare occasion when something goes wrong. To help create public awareness of the service rendered by America's water supply systems, the Cast Iron Pipe Research Association is presenting little known facts about public water supply to the *six million* influential readers of "Time" and "Nation's Business." For example, the following illustration and excerpts from a current advertisement:

Town without a future

The town without a future is the town without a public water supply system. Community growth depends on an adequate supply of running water for both home and industrial use.

Sewer systems, for example, cannot function without public water supply. Purification processes have so improved health conditions that typhoid has been reduced almost to the vanishing point.

Due credit for the progress of any town should be given to the farsighted planning and efficient operation of its public water supply system, all too often taken for granted. Yet it is the most important public service in any community, literally indispensable.

* * *

If your town is planning a water supply system, remember that some or all of the original cast iron water mains are still serving in 200 of America's largest cities.

Cast Iron Pipe Research Association, T. F. Wolfe, Research Engineer, Peoples Gas Bldg., Chicago 3.

SERVES FOR CENTURIES

AUTOMATIC VOTING MACHINES

Are the Choice of
3500 Cities and Towns from Coast to Coast

BECAUSE:

1. Voting is easier and faster
2. There are no spoiled or defective ballots
3. Absolute secrecy is maintained
4. A mechanically accurate count is assured
5. The results are known when the polls close
6. A permanent record is obtained
7. Election expenses are reduced

Interested Officials, Organizations and Individuals are Invited to Write for Literature

AUTOMATIC VOTING MACHINE CORPORATION

JAMESTOWN 55, NEW YORK

Builders of Voting Machines Since 1898

ELLIS PIPE CUTTER PARTS

All parts interchangeable with our cutter put out for the past 40 years. Order what is needed to place your cutter in good working condition.

ELLIS & FORD MFG. CO. **148 South Woodward Ave., Birmingham, Mich.**

FOR STOPPING LEAKS IN PIPE LINES...

Emergency Pipe Clamp—the universal repair clamp the world over, for nearly half a century! Easy to apply. Saves cost of new pipe—eliminates job of tearing out old and putting in new.

M. B. SKINNER CO.
SOUTH BEND 21, INDIANA

SKINNER-SEAL EMERGENCY PIPE CLAMPS

ANTHRAFILT

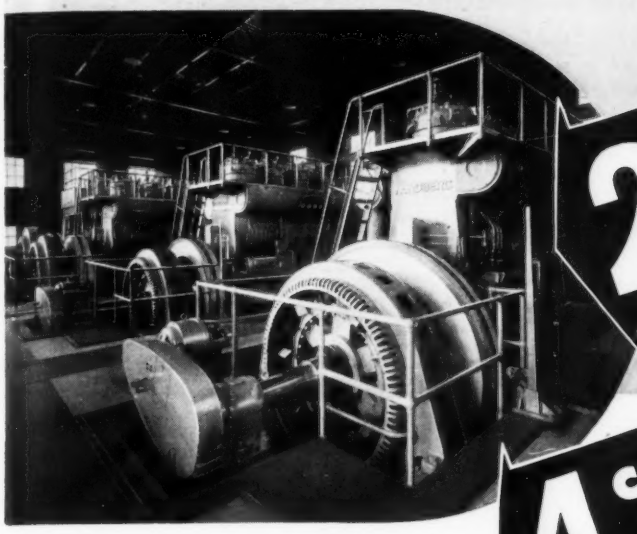
A Filter Medium For All Purposes

ANTHRACITE EQUIPMENT CORP.
Anthracite Institute Bldg., Wilkes-Barre, Pa.

All correspondence regarding sales and engineering should be addressed to:

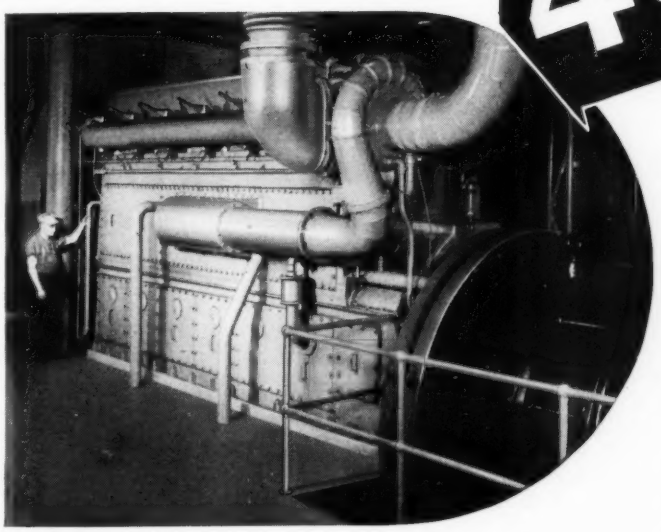
PALMER FILTER EQUIPMENT COMPANY
822 E. 8th St. Erie, Pa.
Engineers and Sales Agents

A NORDBERG DIESEL
will supply your power needs



2 CYCLE ENGINES
Available in sizes up to 8500 B. H. P. in a single unit.

4 CYCLE ENGINES
Built in non-supercharged and supercharged designs in sizes up to 1600 B. H. P.



As a builder of both two and four-cycle oil or gas burning Diesel engines, Nordberg can supply the power needs of plants small and large and a type engine best suited to each requirement. Back of these engines is a record of many years of successful performance that has won for Nordberg a position of leadership in the Diesel power field. The many repeat orders from satisfied users attests to this fact. For dependable, low cost power, investigate the merits of Nordberg Diesels. Our engineers will gladly furnish further particulars on an engine to meet your power demands.

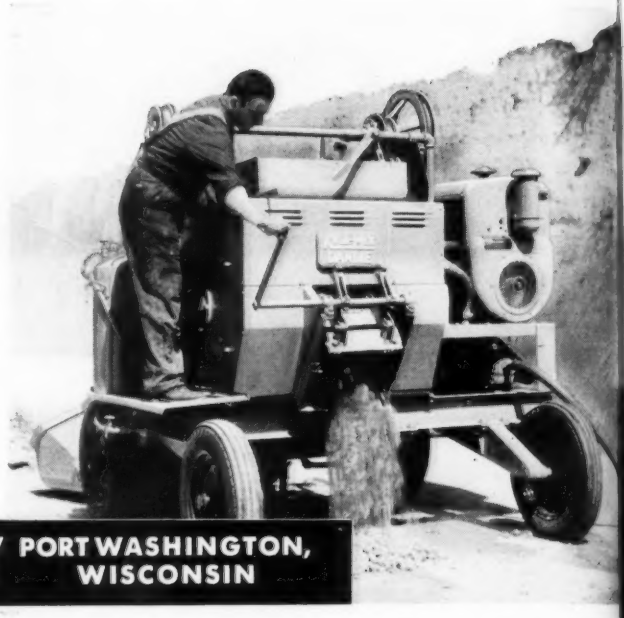
NORDBERG MFG. CO., Milwaukee 7, Wis.

NORDBERG
DIESEL ENGINES

4 Modern Tools to Cut

END DISCHARGE SAVES PATCHING TIME with KWIK-MIX BITUMINOUS MIXER

Kwik-Mix Bituminous Mixers materially reduce patching time, because they combine two important time-saving features: (1) End Discharge, (2) Non-Tilting Discharge. End discharge makes possible direct pouring of mix into break. No wheelbarrow is needed. Because of end discharge, mixer never is pulled through new patch. Non-tilting feature speeds discharge every batch. Full drum is emptied in seven seconds through big discharge door. Door easily opened with one hand. Back-breaking tilting is eliminated. Operator fatigue near end of shift and resulting production loss is eliminated.



KWIK-MIX COMPANY PORT WASHINGTON, WISCONSIN

IDEAL FOR CITY WORK . . . *Parsons* 221 TRENCHLINER*

The new Parsons 221 Trenchliner, public service model in the Parsons line of trenchers, sidesteps surface obstructions as close as 10" to either side of the projected trench. Boom shifts from side to side across entire width of boom carriage. Easy to shift, because it rides smoothly on big diameter rollers. Arc type spoil conveyor reaches up 6' 9", easily dumps into 1½-ton trucks. Telescoping ladder type boom can dig over and under obstructing pipes in trench, virtually eliminating hand work.

*T/M REG. U. S. PAT. OFF.

PARSONS COMPANY NEWTON, IOWA

YOUR Maintenance Costs

Preventive maintenance with KOEHRING MUD-JACK pays BIG DIVIDENDS

T/M REG. U. S. PAT. OFF.

Koehring Mud-Jack reduces maintenance costs on concrete street slabs, sidewalks, curbs and gutters. Sunken slabs, sidewalks, curbs and gutters can economically be raised to grade before weakened subgrade conditions can cause damage. Through small holes drilled into depressed slab Mud-Jack pumps inexpensive cement-sand slurry to replace firm foundation beneath concrete. Cost of Mud-Jack maintenance is but a fraction of replacement cost. Koehring No. 10 Mud-Jacks and Koehring No. 50 Mud-Jacks are used by cities, towns and counties throughout the U. S.

HEAVY-DUTY *Handyman*

In the Koehring 205, the new Heavy-Duty Half Yard, exceptionally heavy construction for a machine of its size is combined with all the half yard features that make this model ideal for city yard and maintenance work. Independent traction and fast swing step up output when 205 works as crane or clamshell, handling aggregates, pipe, lumber. Chain-driven double cable crowd gets extra power to dipper when 205 is used as shovel. Completely and easily convertible. Available on crawlers or on truck chassis as a one-man operated Cruiser Crane.

KOEHRING PRODUCT

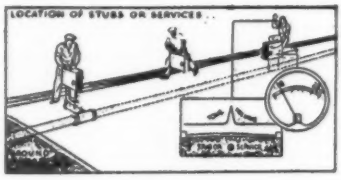
KOEHRING COMPANY MILWAUKEE 10, WISCONSIN

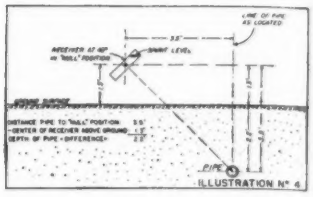
782

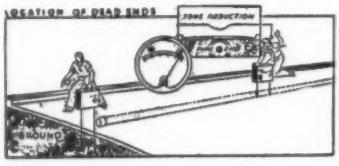
Buried Pipe and Cable Finder

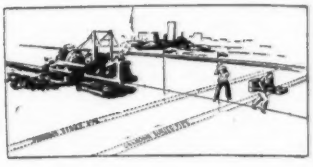
M-SCOPE

Water and Oil Leak Detector









The M-Scope is solving—successfully—the varied problems involved in the development, operation and maintenance of buried pipe and cable systems and is in daily use by representative organizations in such important groups as:

- MUNICIPALITIES
- GOVERNMENT PROJECTS
- SEWERAGE AND WATER PLANTS
- PUBLIC UTILITIES
- CONSULTING ENGINEERS
- AIRPORTS
- INDUSTRIAL PLANTS
- OIL AND PIPELINE COMPANIES

Free 16-Page Booklet Upon Request

FISHER RESEARCH LABORATORY, Inc. Palo Alto, California

Eastern Distributors of
FISHER M-SCOPE and LEAK DETECTORS

Joseph G. Pollard Co., Inc.

PIPE LINE EQUIPMENT

141 ASHLAND PLACE, BROOKLYN 1, NEW YORK

MARTIN CARRYHAUL TRAILERS

TRADE MARK REGISTERED

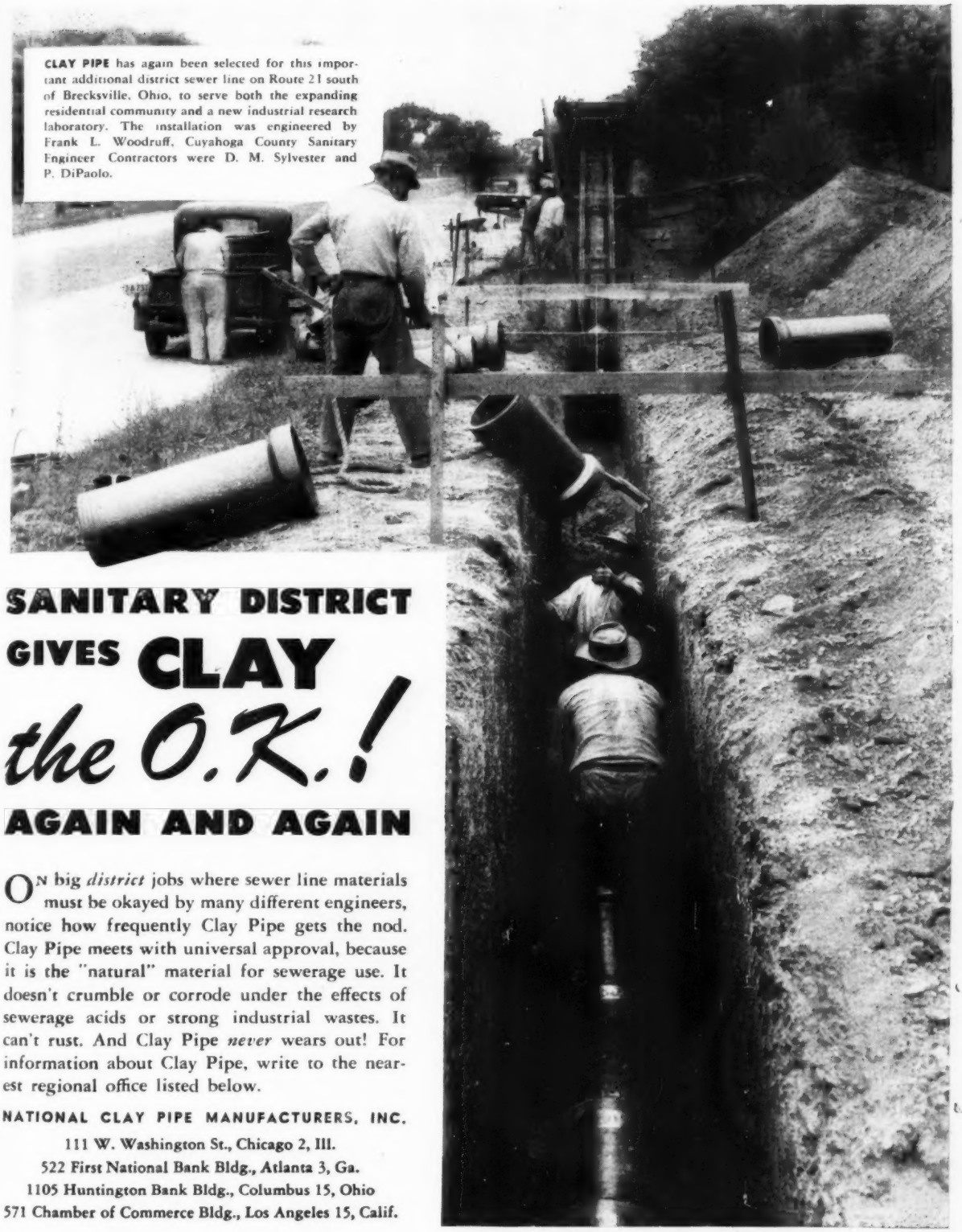
MARTIN CARRYHAUL TRAILERS
"Make Hauling A Pleasure!"

Ease of loading, dependability and economical operation are three Martin CARRYHAUL Trailer characteristics which make them the leaders in the field.
Regardless of your hauling job, there's a proper size Martin CARRYHAUL Trailer to do it for you safely and economically.

Your "CATERPILLAR" Dealer is your MARTIN Dealer. See him for your trailer needs.

MARTIN MACHINE COMPANY
KEWANEE, ILLINOIS

BUY all the Bonds you can . . . KEEP all the Bonds you buy
PROTECT YOUR FUTURE — Buy your EXTRA Bonds now!



CLAY PIPE has again been selected for this important additional district sewer line on Route 21 south of Brecksville, Ohio, to serve both the expanding residential community and a new industrial research laboratory. The installation was engineered by Frank L. Woodruff, Cuyahoga County Sanitary Engineer. Contractors were D. M. Sylvester and P. DiPaolo.

SANITARY DISTRICT GIVES CLAY *the O.K.!* AGAIN AND AGAIN

ON big *district* jobs where sewer line materials must be okayed by many different engineers, notice how frequently Clay Pipe gets the nod. Clay Pipe meets with universal approval, because it is the "natural" material for sewerage use. It doesn't crumble or corrode under the effects of sewerage acids or strong industrial wastes. It can't rust. And Clay Pipe *never* wears out! For information about Clay Pipe, write to the nearest regional office listed below.

NATIONAL CLAY PIPE MANUFACTURERS, INC.

111 W. Washington St., Chicago 2, Ill.
522 First National Bank Bldg., Atlanta 3, Ga.
1105 Huntington Bank Bldg., Columbus 15, Ohio
571 Chamber of Commerce Bldg., Los Angeles 15, Calif.

CLAY PIPE

CLAY PIPE NEVER WEARS OUT!

C-647-2

ANOTHER GREAT TRAXCAVATOR

REG. U. S. PAT. OFF.

Digs · Grades · Loads
Carries · Bulldozes
Backfills · Spreads
Casts · Levels · Strips

●

Digs Toughest Soils
Year-Around Utility
High Production
Low Yardage Costs
Complete Visibility
Fast, Easy Operation

HERE'S the newest member of the famous TRAXCAVATOR family, the Model T-6 — climax of 20 years of tractor-shovel building . . . Brings to excavating, dirt-moving and material-handling fields, a new measure of multi-purpose utility and low production costs.

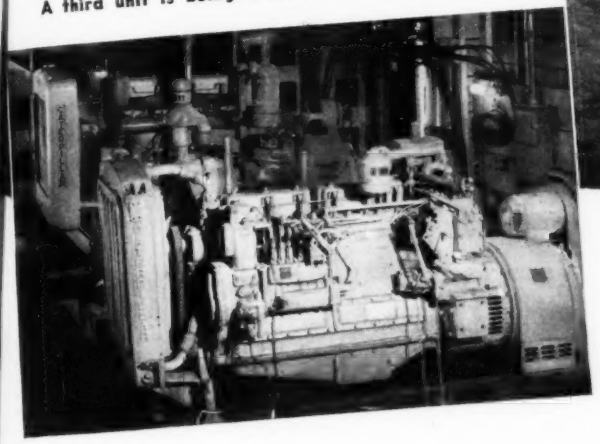
It mounts on the "Caterpillar" D6 tractor and is engineered to utilize most efficiently the full power, speed and work capacity of that renowned tractor . . . over 16,000 pounds of tractive effort that digs full loads in toughest soils . . . quick reverse, unequalled visibility and sure-footed balance that spells high-speed, low-cost digging, loading, grading and moving of earth or loose materials . . . ability to load big hauling units or small dump trucks with equal ease.

TRAXCAVATORS are the only full and complete line of tractor-excavators . . . there's a size for every job and purpose . . . and both TRAXCAVATORS and tractors are sold and serviced by your TRACKSON-"Caterpillar" dealer. See him today about the T-6 and other sizes of TRAXCAVATORS, or write direct for facts to TRACKSON COMPANY, Dept. AC-37, Milwaukee 1, Wisconsin.

TRAXCAVATORS ARE PROFIT-MAKERS

City in the making

"Ten thousand by July is booming Rangely's cry." Two "Caterpillar" Diesel Electric Sets supply all the current for this fast-growing Colorado oil town. A third unit is being added for increasing needs.



No longer need a community with "growing pains" wait long for that important modern ingredient of self-sufficiency: *municipal power and light*. No need to wait for high-lines from afar. No need for present taxpayers to carry the "dead weight" of an oversize power-plant to anticipate distant-future growth.

"Caterpillar" Diesel Electric Sets solve such problems—quickly, economically. Self-contained, they afford complete-package electric-power units which can be installed one by one as current consumption increases.

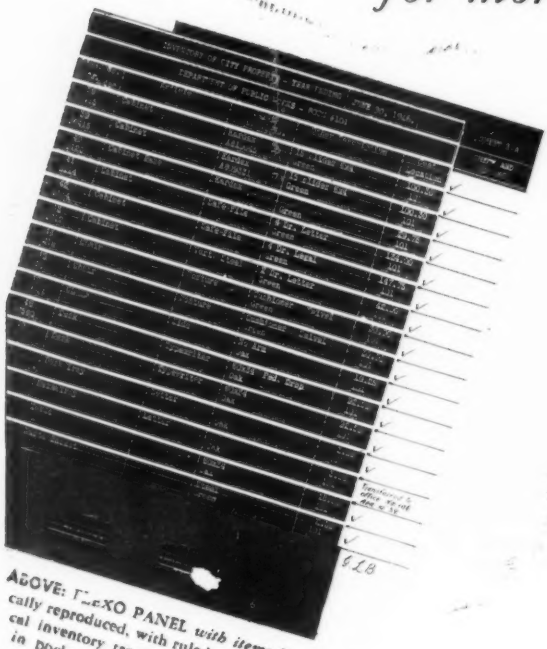
"Caterpillar" Diesels require no costly housing (a "shack" will do). They're rugged, dependable, long-lived. Need little maintenance and no specially trained attendants. Burn low-cost fuel—sparingly and with remarkable efficiency. They're the answer to thousands of isolated communities' wishful longing for industrial power, street lighting and home conveniences.

CATERPILLAR TRACTOR CO. • PEORIA, ILLINOIS

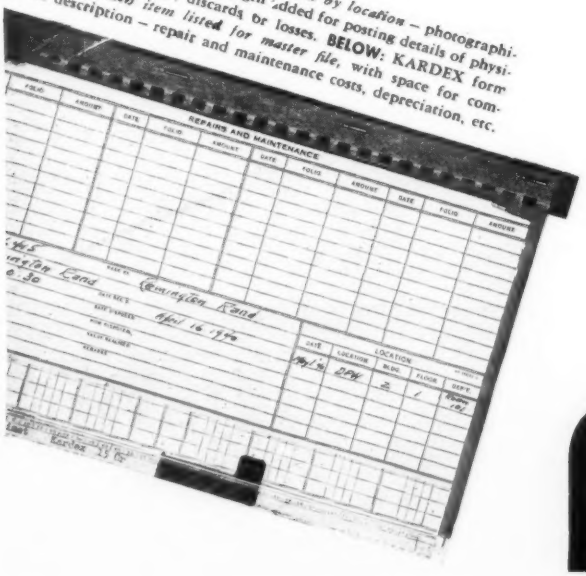
CATERPILLAR
DIESEL
ENGINES • TRACTORS
MOTOR GRADERS
EARTHMOVING EQUIPMENT

simplified property records

for more accuracy, positive control



ABOVE: FLEXO PANEL *with items listed by location* – photographically reproduced, with ruled margin added for posting details of physical inventory transfers, discards or losses. **BELOW:** KARDEX form in pocket – *each item listed for master file*, with space for complete description – repair and maintenance costs, depreciation, etc.



simplicity, speed and accuracy feature the VISIBLE way...

YOUR INVENTORY RECORDS are among the most vital of all the data for which you, as a public official, are held responsible! You want to give your community the highest efficiency possible in this important administrative function, and you want to assure yourself protection against criticism and loss.

With Remington Rand Visible record systems you are assured of maximum accuracy, plus *speed*—an important consideration for over-burdened clerical personnel.

Public departments using the continuing inventory plan report substantial savings in time and expense with *visible* equipment: filing and finding are faster, and the centralized master file with Kardex economizes on valuable office space too!

Whether you use a periodic check or the continuing system, you'll find Kardex and Flexo faster...cheaper...easier!

Let us tell you more about the advantages of Visible inventory control! Just telephone your nearest Remington Rand branch office, or write to us in New York.

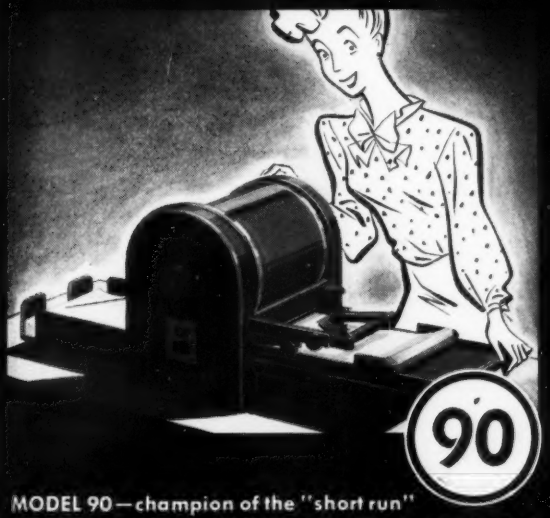
SYSTEMS DIVISION

Remington Rand

315 FOURTH AVENUE · NEW YORK 10, N.Y.

DELIVERY NOW CURRENT

Automatic feed, hand-operated Mimeograph brand duplicators



MODEL 90—champion of the "short run" for copies of the highest quality at the lowest cost consistent with quality. Easy to use. Popular price.

MODEL 91—versatile, all-purpose master of duplication to solve those troublesome paper work problems quickly, easily, economically.

NEW *HIGH-VISIBILITY EASY-TO-USE*

CUSHION SHEET FOR USE WITH MIMEOTYPE (BLUE) STENCIL SHEETS

High visibility, no glare—easier on the eyes when typing stencil and proofreading.

High copy quality, sharp letter outlines, blacker reproduction—easier, quicker corrections.

Ask your distributor about this new cushion sheet—a major advancement in Mimeograph brand products—a major improvement in stencil duplicating!

A. B. DICK COMPANY, Dept AC-347
720 West Jackson Boulevard, Chicago 6, Illinois

☐ Place my order for.....Model.....Mimeograph brand duplicator with the distributor nearest me.

☐ Have a salesman call.

☐ Send me more information on Model.....

NAME.....

ORGANIZATION.....

ADDRESS.....

CITY.....STATE.....

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The Mimeograph brand duplicator

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MIMEOGRAPH is the trade-mark of A. B. Dick Company, Chicago, registered in the U. S. Patent Office.

WHEREVER YOU GO— YOU SEE BURROUGHS MACHINES

WORKMAN SERVICE, INC., of Chicago, Minneapolis and Los Angeles, serves more than 1500 business concerns throughout the country, handling business "overloads" in calculating, tabulating, typing and transcribing. Since 70% of this huge volume of work is calculating, the use of Burroughs Electric Calculators is significant. More than 300 Burroughs Electric Calculators are in use or on order to handle assignments accurately, swiftly, at low cost.

In business after business, Burroughs has won the respect of those responsible for efficient handling of figures. They turn to Burroughs first—because they have learned that Burroughs *is* first in meeting their needs:

First in Machines . . . with the most complete and flexible line, the latest time-saving features, the most modern machine developments.

First in Counsel . . . with thorough knowledge of procedures, most progressive ideas to meet changing conditions.

First in Service . . . with the best trained service men, the finest service methods, the most convenient service arrangements.

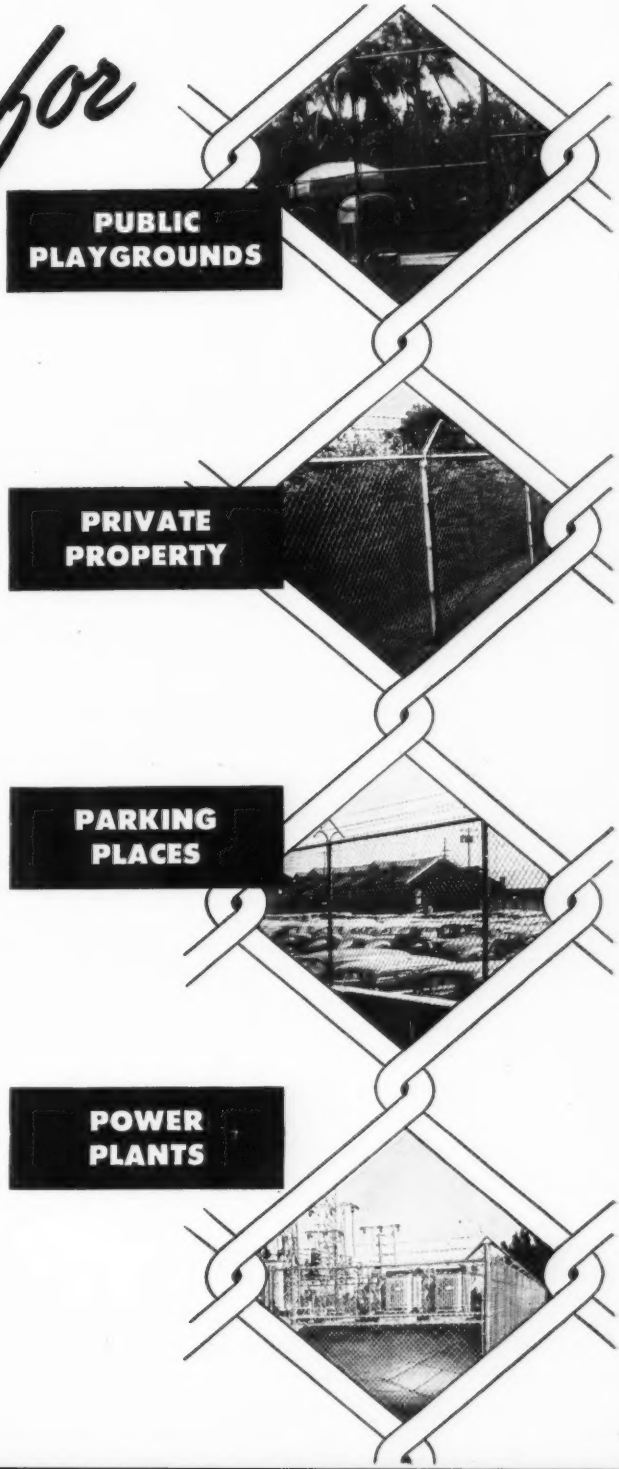
These three factors underlie the satisfaction that Burroughs offers to business, large or small. The stepped-up tempo of Burroughs research and development will continue to reward Burroughs users with the finest in machines, counsel and service.

Burroughs Adding Machine Company, Detroit 32, Michigan.

Burroughs
IN MACHINES
IN COUNSEL
IN SERVICE

FIGURING, ACCOUNTING, STATISTICAL AND CASH REGISTERING MACHINES • NATIONWIDE MAINTENANCE SERVICE • MACHINE SUPPLIES

Protection for



Consider the moderate installation cost, the amazingly low maintenance costs, the protection it affords against theft, vandalism and other hazards—and you'll agree there's "dollar and sense" wisdom in protecting property with a well erected chain link fence.

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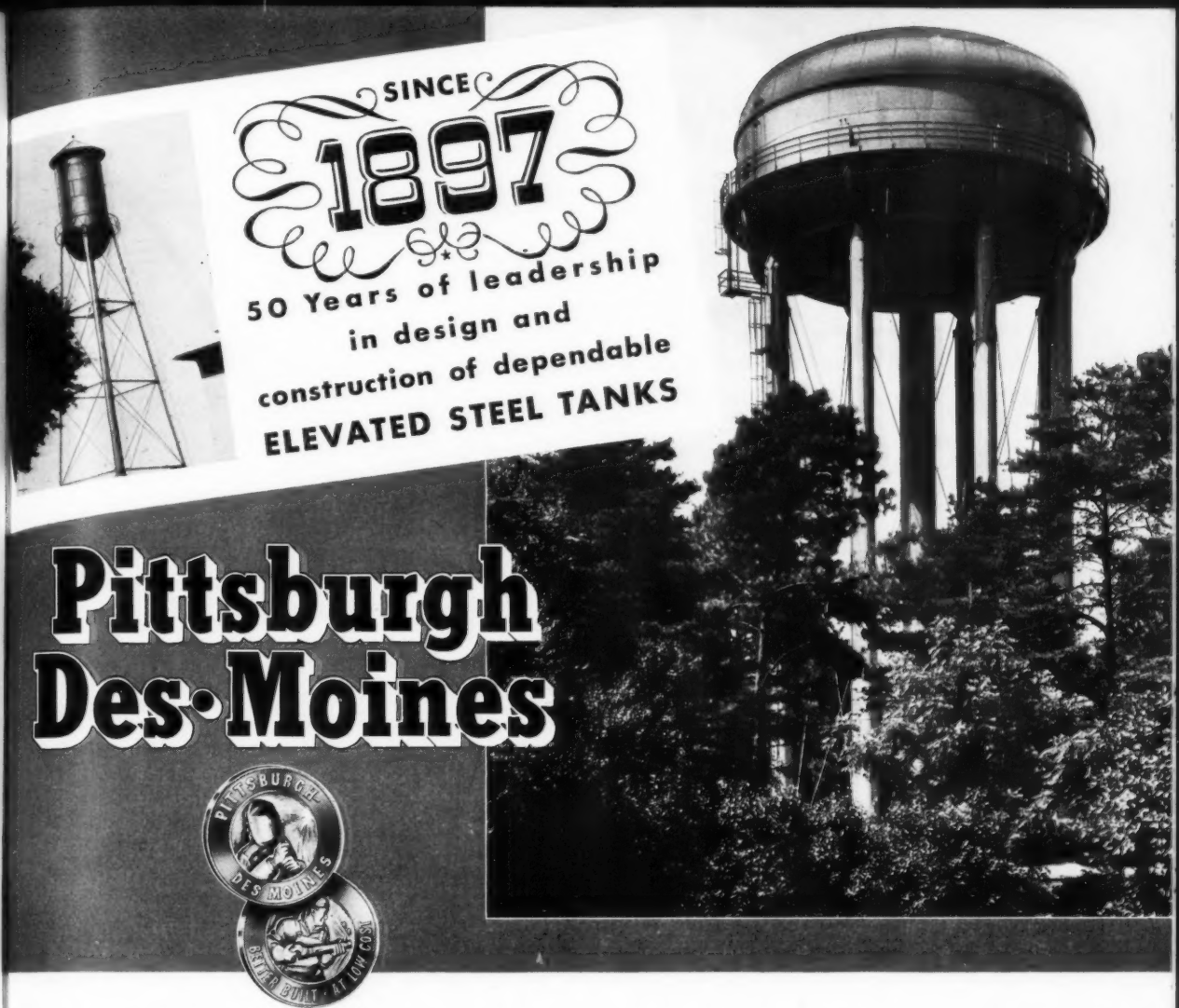

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Louis R. Howson,
Alvord, Burdick & Howson, Engrs.
Chicago, Ill.
Journal Am. W. W. Assn., Jan. 1946

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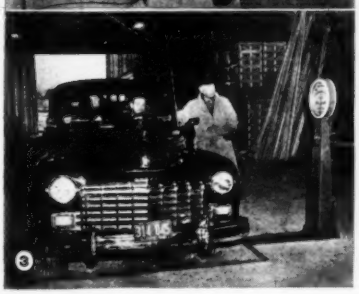
Volume LXII Number 3
MARCH 1947
The American City

Evanston Inspects All Local Vehicles

By FRANK M. ANDREWS
Lieutenant Commanding Traffic Police Department
Evanston, Ill.



EVANSTON, ILL., has had compulsory vehicle inspection of all resident-owned cars and trucks since 1933. This inspection was carried out in a city-owned testing lane which was closed temporarily during the war because of the personnel shortage. In September 1945, the lane was reopened and has been in operation ever since.

Because of the need for additional space by other city departments, it was necessary to move the lane from its old location in the city yards and to erect a building on the new site. Testing-lane operations required a building long enough and wide enough to accommodate one or two lanes of cars. Keeping the construction cost down was another problem. With these considerations in mind, we bought a Quonset hut from the Great Lakes Steel Corporation at a cost of about $6,000. The building, which we purchased in sections of 20-foot lengths, is 40 feet wide and 200 feet long. The total cost of building and equipment came to about $26,000.

The public and nearby municipalities have shown a good deal of interest in the use of this type of building for testing-lane purposes.

Complete new testing-lane equipment was installed. Two heated offices, one at each end of the lane, were installed for use by the inspectors. The equip-

1. Entering the safety lane. Left to right: Chief of Police Carl Ekman, Alderman Harold W. Mogg, Attendant Lloyd Hinze, the author, Commissioner of Public Works Joseph Rose, and President Grant C. Bergsland of the Evanston Safety Council. 2. Testing the headlights. 3. Determining the wheel alignment. 4. Testing the steering mechanism. 5. Testing the brakes. 6. Awarding the safety sticker.
Below, left: The Quonset hut unit that serves as Evanston's safety lane.

ment, purchased from the Weaver Manufacturing Company, includes a Rayoscope headlight tester, a wheel alignment indicator, a front-end hoist, and a brake-testing device.

It takes six operations for a car to go through this lane. In the first operation the car is stopped at the entrance and is registered on a form. At this point, license plates, horn, mirror, windshield wipers and windshield, rear and side glass, turn signals, tail lights, stop lights, and parking lights, are inspected. Then the car is driven ahead about 20 feet to the headlight tester and checked for candlepower, vertical aim, horizontal aim, and defects of the lens.

The third operation is a wheel alignment check. It is accomplished by driving the car over two treadles which register the "toe-in" or "toe-out" of the front and rear wheels. In the fourth operation the front end of the car is lifted upon a hydraulic hoist so that wear in the steering mechanism can be checked.

The fifth operation, testing the brakes, is done on a machine that registers in pounds the effort expended by each individual wheel on the road surface. These figures are read on columns of liquid in a tower to the left of the brake treadles. These figures are automatically and accurately punched on the record card. We require a 50% brake, which means that the total poundage of effort expended by each of the four wheels must total 50% of the weight of the vehicle. We also require equalization of not more than 10% between pairs of wheels.

The sixth operation is at the end of the lane. Here an attendant checks over the record card and affixes a sticker to the windshield. If the vehicle passes, the attendant informs the driver of the next inspection date, tears the duplicate records apart, gives the driver his copy, and files the original copy. If the car is rejected for any of the twenty-five items listed, the driver is advised that he has ten days in which to make repairs and return the vehicle for re-inspection. During this time he is permitted only to drive the car home and to and from the repair shop and the testing lane.

In fourteen years, Evanston has won eleven safety awards in national competition. In 1932, 1933, and 1935, the city won the grand prize among cities of all classifications for its excellent traffic safety record.

Why Do They Leave?

Study Not Necessary to Determine Reasons for Exodus from Cities.

WHY do people move from cities into the suburbs and rural areas? The National Association of Real Estate Boards has asked the Bureau of the Census to conduct a study on this question. There are ample clues to the answer, however, in a recent report of the Milwaukee County Regional Planning Department, *Residential Development in the Unincorporated Areas of Milwaukee County, Wisconsin.* In summarizing the findings of a survey among rural area dwellers, the report states:

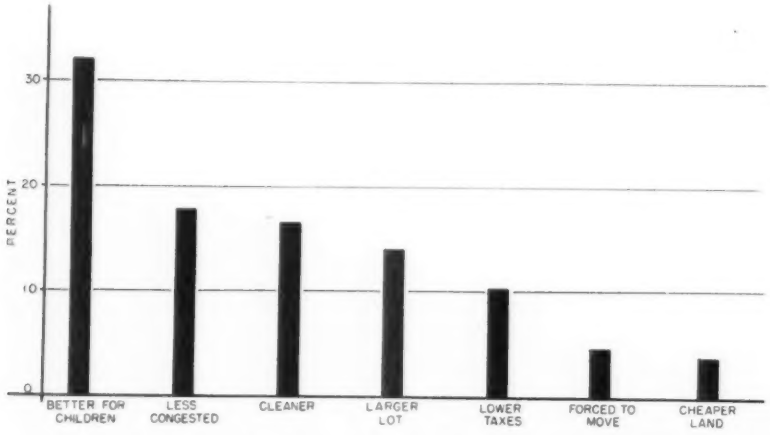
> It is apparent that the exodus from the cities is prompted by a general desire to gain the benefits of the open country rather than by any expulsive force of a given district within the city. People leave the cities because they believe the rural areas are better places to raise children; are less congested; are cleaner and provide larger lots. Only a few are attracted by the promise of lower taxes and cheaper land.

It was found in Milwaukee County that this outward expansion into rural areas probably will be accelerated considerably in the immediate future. Moreover, migrants to these unincorporated areas are generally persons with higher-than-average incomes. Although there is a great deal of subdivided land available in the County in smaller lot sizes, these smaller lots are being bypassed for subdivided areas of more recent date which have lots of relatively wide frontage and are within a plat designed in conformity with modern standards.

Commenting upon the findings of the report, E. A. Howard, director of planning and supervising engineer of the Milwaukee County Regional Planning Department, says:

> The attention of the realtor is respectfully directed to two points especially: (a) desire for larger lots, and (b) the number of existing vacant lots. We hope that the experience of the 1925 to 1930 period of over-subdividing of lots will not be duplicated. With respect to lot sizes, there seems to be little necessity in newly developing areas for duplication of the congestion of the average city. Congestion is probably the greatest factor causing blight and should be guarded against when new home sites are being laid out.

The congestion, the dehumanizing influences, and the irritations of many of our cities are well known and have been discussed and debated for decades. The Milwaukee County survey aids in reinforcing beliefs long held by planners and others interested in civic improvement. Obviously, living conditions in our central cities must be bettered if people of a higher-than-average economic status are to be induced to remain in them. Rather than making additional studies whose findings can fairly well be determined in advance, it would seem far wiser to expend our energies on promoting action programs to clear up the blighted areas within our cities and replan them for more spacious living.



City residents move elsewhere for the reasons shown in this chart, from the report of the Milwaukee County Regional Planning Department.

For a Better Basis of Grading Municipal Positions and Salaries

Point Evaluation— A Necessary Supplement to Civil Service Position Classificaton

By JOSEPH F. BASE
Administrative Analyst
Van Nuys, Cal.

TO describe positions is a relatively simple matter, but to measure the difficulty and responsibilities of various tasks and the extent of training and other factors involved is a very complex problem. Various objective methods have been developed for conducting such analyses and evaluations. Their common merit is the extent to which they assist in and supplement the classification process, which previously has been conducted largely by arbitrary methods, general obesrvation, and personal opinion.

Many municipalities and other public agencies are rightfully showing increased interest and concern in objective position-evaluation and related compensation matters. This is an opportunity to detect and correct inequities in order to improve employe morale and stabilize public employment.

During the war years, many civil service jurisdictions were content to remain mostly "examination conscious" and were reluctant or unable to accept and apply the newer administrative advances. In fact, because of reduced wartime staff and increased postwar examination demands and pay adjustment problems, few jurisdictions find themselves equipped with even a complete, currently maintained, basic classification system.

The duties questionnaire still remains the chief tool for analyzing and classifying positions. Most such forms provide for basic information about each position, to be supplied by the incumbents, and supplemented by data, comment, and approval of the immediate supervisor and other officials. In the usual classification process, the completed questionnaires are tentatively sorted into classes and the information verified by personal interviews with the employes concerned and their supervisors. Class specifications are then prepared, using the information assembled for each occupational group. This procedure is continued until all organization units have been covered and all positions assigned to appropriate classes. For further convenience, similar classes are arranged in broad occupational groupings.

This procedure includes no objective consideration of the relative value of occupations, classes, or groups with respect to position requirements. In fact, the procedure itself and the methods usually employed do not lend themselves to other than arbitrary interpretation. Nevertheless, the method continues to be used, with little success. This is especially true when class specifications have been so loosely prepared as to embody, in a single class, several types of positions having different duties, responsibilities, work requirements, and compensation rates.

The problem is further complicated because many basic classification systems have been erroneously prepared and are not periodically reviewed to reflect changes in duties and responsibilities since their adoption. In numerous instances, present positions have no relation to the corresponding classes to which they were once allocated. No jurisdiction can assume it has a sound basic position classification system, even for examination purposes, until such shortcomings are corrected.

Even then, the use of the basic plan will still be restricted largely to the examination procedure because of the lack of any objective method for position evaluation to determine relative levels for compensation purposes.

The classification system should be more closely related to the compensation structure. This is especially true where pay plans provide for a graduated series of "schedules" or levels to which all position classes are allocated. Obviously, in such cases, the system has far greater significance than that required for examination purposes alone and calls for greater refinement.

It seems obvious that there should be a more objective method of analyzing, evaluating, and classifying positions in the public service. Such a method could be used to furnish more reliable basic information for examination preparation and compensation planning than has thus far been available.

The usual duties questionnaire could be revised and extended to include a summary, a detailed statement of duties performed, and substantiating data under specific job requirements.

Such requirement factors, given relative weights, are usually divided into a number of "degrees" having corresponding numerical values, or "points," which are determined by the analyst. The relative levels of the various positions are determined by the total "point evaluation."

The consistent and unbiased application of such an objective evaluation would permit designing a better compensation plan and the establishment of "pay schedules" in terms of evaluation points (abscissa) as well as dollar increments (ordinates). Its application to a sufficient number of "key positions" in enough classes to include the full range of compensation levels would enable the preparation of a "wage curve" to which all positions could be referred and comparisons made on the basis of their relative total point evaluations, rather than merely by titles, arbitrary judgment, and broad allocation factors. Similarly, it would provide a means for periodic comparisons and adjustments to conform with prevailing wages.

Summary

In brief, it appears that:

1. Position classification systems in the public service have been of use and benefit principally for examining purposes.
2. Even for this limited use, they have in many instances been incorrectly or incompletely prepared.
3. Basic classification systems have frequently not been periodically reviewed, revised, and maintained in current status.
4. For these reasons, and because they are otherwise inadequate for the purpose, their use in connection with the establishment and maintenance of equitable compensation plans has been largely unsatisfactory, both to officials and employes alike.
5. The correction of these shortcomings through the adoption of an objective position evaluation system as a supplement to position classification is a logical step to effect better classification and compensation planning.
6. The adoption of such an evaluation system in connection with the formulation of a sound compensation plan should assure a more practical application of the accepted principle of "equal pay for equal work."
7. The periodical review and revision of the classification and compensation plan, in relation to economic conditions and prevailing wage patterns, should serve to stimulate employe morale in the public service and provide officials with a practical means for salary and wage administration.

Dearborn Plans Joint Garbage-Sewage Disposal

Tests show that garbage-sewage sludge can be filtered without difficulty and that Dearborn can economically dispose of its garbage by this method.

A COMBINATION of raw ground garbage and undigested sewage sludge will cause no operating difficulties in the Dearborn, Mich., treatment plant at either its vacuum filters or its multiple-hearth incinerators. Superintendent of Sewage Treatment Michael Groen determined this after tests conducted last year.

The need for these studies arose because of a decision made by the Ford Motor Co. For many years this organization, always aggressive in matters of research, took the garbage from Dearborn, conveyed it to the Ford plant, and processed it to reclaim oils and grease.

Dearborn used a removable open body on its fleet of trucks. When one became full, its driver drove it to the Ford processing plant, where a giant crane lifted off the full load and replaced it with a steamed-out empty truck body.

Recently the Ford management announced that Dearborn would have to dispose of its garbage elsewhere; that the Ford Motor Co. was no longer willing to experiment with garbage reclaiming at a financial loss.

Ford's decision gave Dearborn city officials a wide-open field to study. The problem was to set up a garbage disposal method. The only requirement was to have the method available and ready to operate on relatively short notice. The officials studied many methods of disposal. When the plant superintendent suggested garbage grinding and disposal in conjunction with a plant already built, with the ultimate advantage of producing economically useful digester gas that could be turned into power, the idea was well received.

Before making any definite commitments, however, the Mayor and the Council were invited by the superintendent to witness a few exploratory tests.

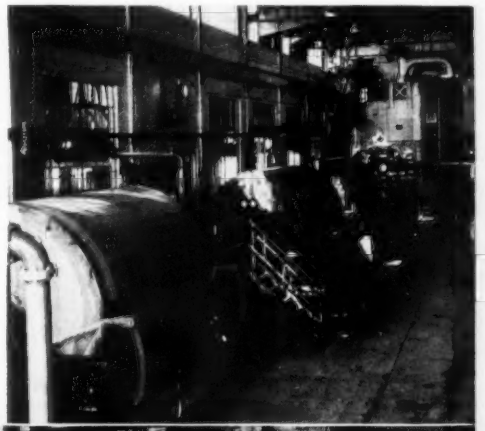
To understand the tests, it would be wise to study the sewage treatment plants themselves briefly. Dearborn has two. One, the East Side plant, has a hydraulic capacity of 63 mgd, can provide only primary treatment, and reduces the five-day BOD from an average of 220 to 125 and the suspended solids from 200 to 100. It has no sludge disposal facilities, but transfers it all to the West Side plant.

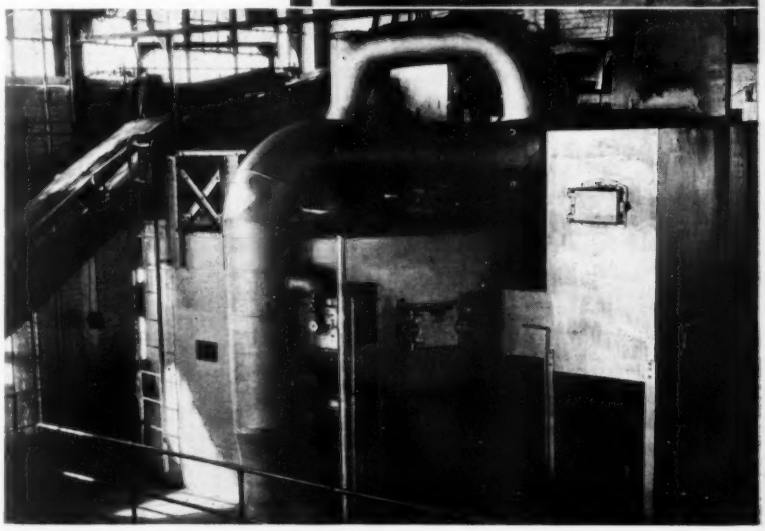
The West Side plant actually is on the west side of Old Fordson, but it is fairly close to the center of population for the city as it now stands after amalgamation. It has a hydraulic capacity of only 15 mgd; but by using chemical precipitation, it provides a somewhat more thorough treatment. (A raw sewage with a BOD of 200 will have no more than 70 ppm when it leaves the plant. Similarly, a suspended-solids content of 240 will drop to 80 when it leaves.) It receives the sludge from the East Side plant and destroys it in a Nichols multiple-hearth incinerator.

The East Side plant delivers a sludge with an average of 3% solids and transfers it to the other plant on an average of three times a week through a three-mile pipeline with two 4-inch Fairbanks-Morse pumps doing the work.

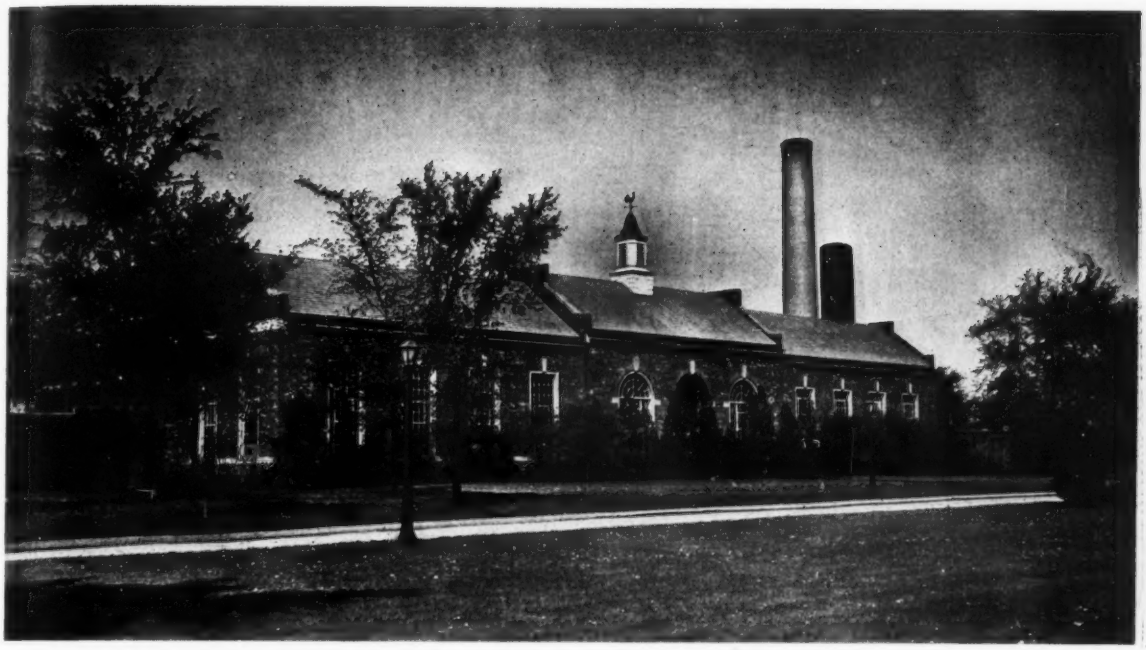
The question, therefore, was whether the introduction of ground garbage would interfere with the filtering and incineration processes, and also to discover its effect on sewage treatment.

Dumping of the garbage into the sewers after grinding would increase the BOD of the sewage, possibly from an average of 200 to 350 ppm. Reducing





Right: The conveyor belt carries the sludge from the vacuum filters in the foreground to the two sludge incinerators in the far background. Below: A close-up of one of the two sludge incinerators.



The West Side sewage plant, where garbage-grinding facilities will be installed.

it again to a point which would meet the requirements of the Michigan Stream Control Commission did not seem practical, inasmuch as it would necessitate the enlargement of the sewage treatment process.

Grinding the green garbage and sending it directly to the incinerators would also affect the design of structures necessary for unloading and grinding. Since the high moisture content of ground garbage would prevent it from going up the present incline of the sludge belt conveyor, it would also be necessary to devise a new method of sending the garbage to the incinerator. As a result of these factors, vacuum filtration appeared to be the answer.

To determine this, Superintendent Groen set up a Jeffrey grinder over his sludge storage tank and introduced 100 tons of green garbage over a period of days in order to produce a garbage-sludge combination of 1-4 ratio. The green garbage, as brought to the plant, had a moisture content of about 75% to 80%; after grinding and introducing water at the grinder, its moisture content went to 94%. He arranged to sort out the bottles, tin cans, and large bones before the garbage went into the grinder. He kept the stirring mechanism operating in the storage tank to insure as thorough a blending of the garbage-sludge as possible. The sludge storage tank consisted of one of the Dorr clarifiers set aside for that purpose.

Comparable figures covering the addition of ferric chloride and lime for sludge conditioning are as follows:

	Sludge only	Garbage-sludge
$FeCl_2$	0.032 lbs.	0.026 lbs.
CaO	0.092 "	0.09 "

The filter cake ran just about the same in weight and texture, perhaps just a bit heavier.

% Moisture in Filter Cake	Sludge Only	Garbage & Sludge
	70.70	71.10
% Volatile	91.4	56.3

Filter rates ranged from 5.0 to 7.5 pounds dry solids per square foot of filter area per hour, depending on moisture content of cake and chemical dosage, using one of three Eimco 8 feet x 12 feet vacuum filters having 300 square feet of filter area.

The combination filtered readily, and the anticipated blinding difficulty that many expected of the vacuum filters did not materialize.

The addition of the garbage improved the incinerating qualities of the filtered combination. On the basis of dry solids, the heat value of each was the following:

Garbage alone	8500 btu/#
Sludge alone	5500 btu/#
Garbage-sludge	6100 btu/#

The tests showed that the combination could be incinerated more easily than the sludge alone and actually enabled the operators to cut the fuel oil consumption of 0.75 to slightly less than 0.50 gallons per ton of #5 fuel incinerated sludge.

With this information, City Engineer Fred Storrer and Engineer Fred Cheek are proceeding with plans to capitalize on this pilot model test. These include a separate building alongside the present sewage treatment plant. The building will have an unloading platform and two grinders, each capable of grinding 15,000 pounds per hour. Instead of using the present clarifier for sludge storage, there will be two 100,000-cubic-foot digesters with floating covers and PFT's heat-exchanger method of sludge-heating. Although the digesters will be used primarily for sludge storage, all gas generated will be used in a 175-hp gas engine. The engineers thereby expect to produce enough power to meet most of the pumping requirements.

The city was faced with an immediate problem that had to be solved satisfactorily from the standpoint of health and sanitation as well as economy and efficiency. Frank Swapka, Dearborn's director of public works, therefore, suggested hauling Dearborn's garbage to a hog farm just outside the city limits. At present this method of disposal is by far the most economical, and is enabling the engineering department to proceed leisurely and cautiously in the consideration of other methods to be substituted for the one now in use. The present arrangement has certain advantages from an economic standpoint, since it has made it possible to use the more efficient Gar Wood Load Packer truck instead of the open removable bodies that formerly were employed. Whereas the city previously needed twelve trucks to collect and dispose its garbage, it now needs only eight.

Street Trees—Part I

One of the finest and most useful of "tailored" trees for many street uses, the globe-headed elm (Ulmus carpinifolia umbraculifera). These fine trees grace 19th Avenue Blvd., Moline, Ill.

PHOTO COURTESY RALPH B. BIRKS, DIRECTOR OF PARKS, MOLINE, ILL.

Edward H. Scanlon, City Forester of Cleveland, Ohio, and editor of Trees Magazine, considers a street-tree master plan essential to the choice and maintenance of healthy, well-shaped city trees.

CITIES must have trees—on streets, in parks, about public institutions, and on home grounds. But it is the street trees that do most for a city, enhancing its real estate values and its desirability as a home-owning community. Municipalities that are conscious of the threat of civic deterioration by continued application of outmoded practices in tree planting and maintenance will see the need for a serious, considered study of their problem by qualified authorities.

A maintenance and planting program that will come within a reasonable budget figure does not, like Topsy, just grow; rather, it is the result of careful planning by persons qualified to evaluate the needs of a city and to prepare master tree plans for guidance in all operations.

The Master Plan

A master street tree plan involves a study of each street. If existing trees are not satisfactory, a suitable species must be selected and a program recommended for removing and replanting. On unplanted streets a consideration of the "street factors" will finally decide the species best suited to prevailing conditions. Streets and subdivisions should have the approval of the arborist at the drawing-board stage, for it is there that many things detrimental to the best development of trees can be avoided if the arborist were consulted.

Street factors that affect the selection of a species are numerous. First is the soil type. If the arborist can be consulted in the original layout, this factor will determine the second—width of planting space. Other factors concern the setback of buildings, overhead wires, the location of street lights, atmospheric conditions, prevailing wind, and, lastly, the character of the neighborhood and the possibility of a change in zoning regulations.

All this information should be collected and assembled on suitable forms, and criteria established for the choice of trees. Spacing distance should be specified. This plan should be adhered to strictly.

Faults of Haphazard Planting

The situation existing today among city street trees is distressing. In most cities the forestry department (a misnomer) is engaged principally in the removal of dead, overgrown, and otherwise undesirable species. In altogether too many cities the replanting is taking place with the same undesirable or out-of-scale species. Not very smart, is it?

Most cities limit their planting to five or six species without regard for the spread of the trees and the size their trunks may attain. In addition to these oversights, and to double the trouble, they are planted usually two to a lot. (For their best and most beautiful development, trees should have air space between their maximum points of growth.) This is not good business, nor in any sense is the purpose of the planting of trees fulfilled. Beauty is not the result when trees are jammed together, and the cost of planting is doubled.

The practice of using only a few species is unsound and unwise for many reasons. First, it is absolutely impossible to do an efficient, economical job with only a few "tools." There are many situations where the size, shape, color, and texture must be considered.

This is Bryden Road in Columbus, Ohio, after phloem necrosis had swept down the street. Such an occurrence proves the fallacy of too-widespread planting of any one species of tree.

PHOTO COURTESY RAY S. DIETZ, SUPERINTENDENT OF PARKS, COLUMBUS, OHIO.

There is another reason for enlarging our choice of species. A blight obliterated the American chestnut tree nearly a half century ago. City tree planters of that time should have been warned that we might be visited with an epidemic of the same destructiveness on one or more of the species too generously, but not wisely, used. They did not heed the warning, and it has happened.

Two of the most widely used street trees in America, the American elm and Oriental plane, are seriously threatened with possible extinction, or at least extreme decimation. The situation is so serious in some parts of the nation that the use of either species should definitely be avoided.

Several years ago, a virus disease of the American elm, phloem necrosis, became epidemic in Columbus, Ohio. Over 20,000 American elms have died.

Bad judgment was used in selecting trees for this street. The trunks are too large for the space available, the tops are brushing the houses, and the heavy shade makes lawns and neat foundation plantings around homes impossible.

PHOTO COURTESY THE AUTHOR

and, according to authorities, the remaining estimated 195,000 elms will undoubtedly follow. The indirect effect on many desirable species which the elms protected from the elements is difficult to predict, but it is safe to say that many thousands of catalpas, silver maples, etc., will be destroyed by wind and storm.

Another serious threat to the elm is Dutch elm disease. This fungus is carried from tree to tree by a small beetle and has attained epidemic proportions on the east coast, where the elm reaches its most majestic proportions. This disease, too, is spreading. It has recently been rediscovered in Cleveland, where the original infestation in the United States was found by Charles F. Irish in 1930. It is spreading alarmingly in northeastern Ohio, but its main center of destruction still remains on the east coast. Numerous other enemies make the American elm a poor choice for street use.

The widespread planting of Oriental planes during the past fifty years is another example of the folly of concentrating on a few species. The canker-stain disease, a deadly fungus, swept through Philadelphia several years ago, killing 10,000 trees in one year. It was severe in Baltimore and up the east coast. This disease has spread westward to Ohio, where, in Cleveland, the first recorded case was found in November 1946.

Use Many Species and Varieties

The writer has long advocated the policy of using as great a number of species as it is possible to grow in a given region. This number naturally will increase as we go south into less arduous climates; but even in the more rugged parts of the country the possibilities of growing little-known species —and this applies to exotics—seems to be rather bright. This is also true of some of the little-used varieties of well-known species.

This gets us back to "street factors," and the selection of trees that will be economical and beautiful because they fit the site where they are planted. Evaluation of many streets on the basis of street factors will show us that we must have trees of many different shapes, forms, texture, coloration, and size—small, medium, large, round, conical, vase, spreading, upright, globular.

Under the last-named form we have an interesting, beautiful and very useful tree, one of what the writer terms "tailored" trees. It is the globe-headed elm (Ulmus carpinifolia umbraculifera). A beautiful avenue of these trees is pictured here.

The globe-headed elm is a horticultural variety, by which is meant that this off-shoot of the smooth-leaf European elm, which does not itself grow in this form, was found as a freak. Some enterprising horticulturist, recognizing its value, perpetuated the form by grafting a twig of the freak on a sapling of the parent tree.

The tree may also have some degree of resistance to the Dutch elm disease. Several years ago, a Dutch scientist, Dr. Christine Buisman, searching for elms resistant or immune to this disease, discovered in Spain an elm that was resistant. Botanically, this tree is Ulmus carpinifolia variety "Christine Buisman." The fact that the globe-head belongs to this family warrants our further consideration of it as a street tree.

By nature it is slow-growing, which is desirable; although not too slow (the trees in the picture are thirty-five years old). Its branches are twiggy but tough, and not easily broken by ice or wind. This tree can be used to good advantage where there are overhead wires. Being round-headed, it is easily pruned to its natural contour without disfiguring, and because there are no major cuts involved, there is no heavy sucker growth and no need for further pruning for two to five years.

In the next issue Mr. Scanlon will discuss more "tailored" trees and some planting and maintenance equipment.

European Elm Resists Disease in U. S.

THE U. S. Department of Agriculture has found that the Christine Buismen elm, a rare variety, is resistant to the Dutch elm disease. The trees were brought from England in 1939 by the Agriculture Department and a number of them were planted at Morristown, N. J., and Glenn Dale, Md.

Those planted at Morristown, which is in the midst of one of the areas longest infected with the disease, were inoculated with the fungus as soon as they became well established. During the six years they have proved remarkably resistant, according to pathologists of the Bureau of Plant Industry, Soils, and Agricultural Engineering. The Buisman elm does not have the graceful arching habit of growth of the American elm, but has grown about as fast in the experimental planting, the specialists say, and has a good pyramidal form. The Bureau has propagated it by the layering method. Rooted layers were distributed for testing last fall to sixteen aboretums, universities, state experiment stations, and city park departments from Massachusetts to Oklahoma. This exhausted the available supply.

The sixteen arboretums which received rooted layers are as follows:

Arnold Arboretum, Harvard University, Cambridge, Mass.
Massachusetts State College, Amherst, Mass.
Connecticut Agricultural Experiment Station, New Haven, Conn.
Brooklyn Botanical Garden, New York, N. Y.
New York Botanical Garden, New York, N. Y.
Boyce Thompson Institute, New York, N. Y.
Cornell University, Ithaca, N. Y.
College of Forestry, Syracuse, N. Y.
New Jersey Agricultural Experiment Station, New Brunswick, N. J.
Morris Arboretum, University of Pennsylvania, Philadelphia, Pa.
Park Department, Cleveland, Ohio
University of Kentucky, Lexington, Ky.
Botanical Garden, St. Louis, Mo.
University of Missouri, Columbia, Mo.
Oklahoma A. & M. College, Stillwater, Okla.
Kansas State College, Manhattan, Kansas

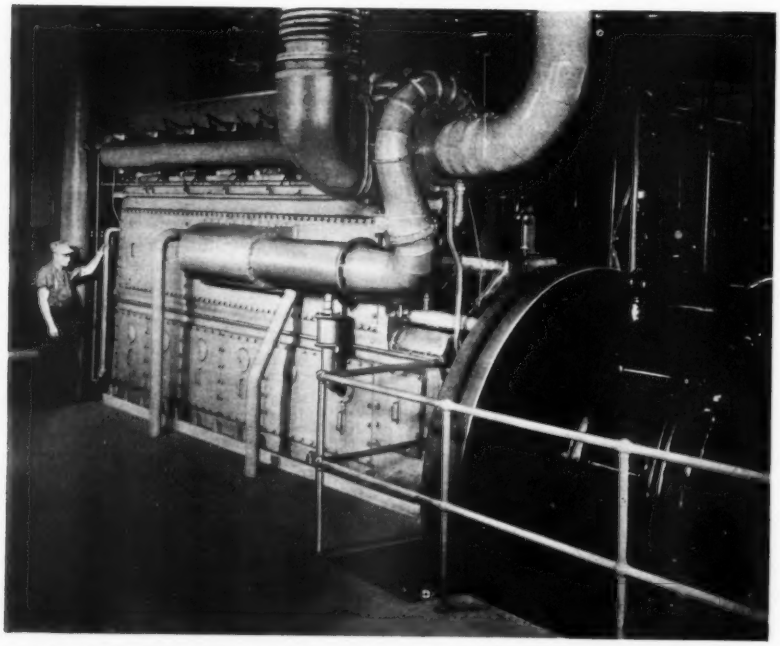
Menasha Municipal Power Plant
Installs New Intercooled Diesel Unit

This six-cylinder Nordberg engine is the first such stationary installation in commercial service in the country.

THE installation by the Menasha, Wis., municipal power plant of a 6-cylinder Nordberg supercharged intercooled diesel engine is of interest in several ways. For one thing, this is the first such stationary installation in commercial service in this country.

Another outstanding feature is the use of intercooling of the supercharging air supplied. The 4-cycle, 16-inch-bore, 22-inch-stroke engine is supercharged by an Elliott-Buchi exhaust gas turbocharger. The intercooling is done between the turbocharger and power cylinders. This is accomplished by means of a finned tube cooler placed in back of the covers on the exhaust side of the cylinder block. Water from Lake Winnebago passes through the tubes, while the air from the turbocharger to the cylinder passes over the finned surfaces of the tubes. Intercooling increases the rating of the machine between 18% and 20%, with the same mean temperature in the cylinders and the same average exhaust temperature being maintained. Air passing through the intercooler is cooled to within approximately 15°F. of water temperature, which at Menasha reaches a maximum of 80°F. in summer.

Menasha's power and water plant. Water filtering and settling basins are at the left. Diesel engine generator sets are in building at right.



The exhaust side of the 1,100-hp Nordberg diesel engine, showing the turbocharger and connection to intercooler. The engine is the 4-cycle type.

An economical feature is the utilization of the old foundation and generator. This reduced the cost and permitted the new unit's being placed in service much earlier. The normal speed of the Nordberg FS-166 engine is 327 rpm, while the old generator was built to operate at 300 rpm. Thus, this reduction in speed lowered the engine rating from 1220 to 1100 hp. The old foundation was used with minor operations, and the old generator was left in its original setting.

As elsewhere, there has been a constant growth in plant output. The combined generated and purchased power for 1945 reached a total of 14,402,793 kilowatt hours, or about twice the city's requirements of ten years ago.

The history of the Menasha plant is closely interwoven with that of the growing industrial city of Menasha, located about 85 miles north of Milwaukee, and situated on Lake Winnebago at its outlet into the canalized Fox River. A brief glance backwards reveals that the plant originally started as a water pumping station in 1905. This station had two three-cylinder 75-hp diesel engines belted to triplex pumps. In 1907, a generator was belted from one of the engines to provide street lighting. A few houses were also supplied with electric service at this time. A demand soon arose for 24-hour service. A 225-hp engine was installed in 1911; a duplicate, in 1913. In this same year, litigation was started by a local public utility to prevent expansion of the municipal plant's services. As a result, the latter was shut down for two years. However, after a favorable court decision for the city, the plant resumed operation and took on all residential and commercial service. It has continued to do so ever since. In later years, two 600- and two 1200-hp units were added, one of which was replaced by the Nordberg engine.

Superintendent P. E. Widsteen has charge of the municipal electric and water utilities.

Some Problems in Connection With Revenue Bonds

By HARRY L. SEVERSON
Bankers Trust Company
New York, N. Y.

THE financing and construction of the large accumulated demand for public improvements involve a series of related political and financial problems which can be expected to come increasingly to the forefront of public attention as the more pressing and spectacular problems of demobilization are passed.

This widespread demand for public works comes at a time when the relative position of the various governments is in a period of transition. During the Roosevelt Era, the practice developed of looking primarily to Washington for aid, but this trend has apparently been reversed. Since most of the sentiment for economy and a balanced budget is being concentrated at the federal level, the pressures for specific capital improvements will tend to converge on the states and their subdivisions. In all probability, local governments will be forced to carry a considerably larger proportion of the cost of capital improvements than was the case in the pre-war years.

Local Budgets and Higher Prices

On superficial examination, the states and their political subdivisions appear to be in a strong position to assume this added burden. In many instances, the reduction in debt and the improvement in current position seems substantial until it is compared with the cost of the public works contemplated, and with the fact that the full impact of the higher price level has not been reflected in local budgets. The cost of equipment and material has been going up, and municipal employes are making strong claims for higher salaries to offset the increased cost of living. Existing school facilities, in particular, are regarded by many citizens as inadequate. There is, of course, no such pressure for increasing the income of local governments; on the contrary, there is considerable organized resistance to higher tax levies. This resistance is understandable, and if it is not carried too far, it is a wholesome influence. But, until the price level is more or less stabilized, and the success of the various governments in balancing their budgets has been determined, it is extremely difficult to estimate the margin of government moneys available for capital improvements and debt service.

To local officials caught between skeptical taxpayers and pressure groups demanding costly improvements, revenue bonds seem to be an ideal compromise. The advocates of the particular project can be given what they want without making the taxpayers too unhappy. The long and honorable record of water bonds can be cited with approval, and the financial problems of the local government do not appear to have been increased, as revenue bonds are usually omitted from the statement of debt when computing the debt ratio. The fact that, in the nature of the case, a considerable proportion of the cost of providing a service falls upon the users is, in many instances, an important advantage, since there is no good reason why the beneficiaries of certain projects should not pay a major part of the cost involved.

The author of this article regards revenue bonds as a convenient and satisfactory method of financing self-liquidating projects, but he urges conservative and careful planning to avoid the danger of defaults and embarrassment to investors and the community.

The creation of a self-liquidating project is thus a convenient method of financing certain large operations—and a happy one, if it is soundly conceived and efficiently managed—but under unfavorable circumstances revenue bonds can be a source of serious embarrassment. The high level of business activity in the 1940's to date and the increase in the price level have resulted in most of the self-liquidating projects, constructed in the depression, working out according to schedule. With this good record so fresh in mind, there is a temptation to take the easy way and use revenue financing not only to include all projects which can possibly be made to pay for themselves—even though the margin is thin—but also to include undertakings which do not produce revenue in the ordinary course of operations. In a few cases such things as police fines have been pledged to "sweeten" weak issues. There is nothing good to say about such practices, and if they become general these pseudo-revenue bonds can be expected to bring the entire class into disrepute.

Many Types of Revenue Bonds

Each bond contract is prepared separately, and while attorneys tend to follow certain general patterns, numerous variations have developed, with the result that the broad heading "Revenue Bonds" has come to include many different types of issues. The only characteristic they have in common is that each issue is serviced from a pledge of revenues received from specific earning assets, usually those acquired from the proceeds of the bond issue. In some cases the general credit is also pledged, in which case the municipality agrees to use other funds, even to levy an additional tax, if necessary, to service the bonds. The legal status of revenue bonds which carry the pledge of the general credit is quite different from that of revenue bonds which do not have this added support; but, since the problems of planning and administration are quite similar, the practice has developed of considering them together for many purposes.

Subsidies and Tax Exemption

Public controversy over revenue bonds usually involves not so much the question of whether revenue bonds should be used, but the more basic questions of whether or not the project itself should be undertaken, and if so, whether it should be under private or public sponsorship. Almost all public enterprises receive at least some public aid either through direct grants or in the less obvious form of tax exemption. There is nothing inherently bad about such practices if the purpose of the project is clearly within the public interest, and if the character and amount of the aid are matters of common knowledge. Businessmen, however, object with good reason to special aid to publicly owned projects which are in direct competition with them.

One of the significant differences between a self-liquidating project and a private business enterprise is that the former is typically exempt from certain taxes. Exemption from the federal corporation tax is important to all public projects, and the exemption from the

federal power tax is an aid to publicly owned electric utilities. At one time, municipally owned utility properties were usually exempt from the general property tax, but the recent trend has been for these properties to make contributions to the general fund, on about the same basis as if they were privately owned. The most widely discussed type of tax exemption is an indirect one. The interest paid on revenue bonds, like the interest paid on all state and local bonds, is not included by the recipient in his gross income for the computation of the federal individual income tax.

Management a Serious Problem

Good management is no less essential for the prosecution of a publicly owned enterprise than it is for the profitable operation of a private business. It is not easy for elected officials to choose and hold the talent required to manage successfully a large public venture; and, as would be expected, there is a wide variation in the quality of the management. An alert citizenship and an enlightened public opinion exert a wholesome influence; while the chances of a self-liquidating project operating successfully, in an area where the public is apathetic or the politics notoriously bad, are very poor indeed.

Revenue bonds are a hybrid, which complicates the whole problem of government finance in the area. While they typically carry tax exemption and are listed as municipals for some purposes, they have many of the characteristics of corporate bonds. Self-liquidating projects must be operated more or less like business enterprises if they are to succeed; hence, some of the generally accepted principles of public finance have no application. In some quarters, it has become almost a canon of public finance that debt should be expanded in a depression and reduced in a boom (if at all). In the abstract this is a sound idea, if not pushed too far. Construction of a new city hall and court house should, in most instances, be postponed when labor and materials are scarce; on the other hand, the failure to expand the capacity of a publicly owned utility to care for an increase in demand may stifle the growth of the community and contribute to the onset of a local depression.

Risk Should Not Be Shifted

In all new ventures there is a promotional risk. Although this risk can be materially reduced by careful planning and sound budgeting, it cannot be eliminated entirely. There are many complicated steps between a promising idea and a successful self-liquidating project under the best of circumstances, and an unstable price level adds greatly to the problems. A rising price level makes the cost of construction uncertain, while a declining price level makes the later servicing of the debt extremely difficult. Since a default is a public admission of a serious failure which reflects adversely upon the community, it is unwise to attempt to shift the risk to the investors.

There are a number of ways in which the risk can be assumed by the community: one is to pledge the taxing power, which if the general credit is good, has the added advantage of reducing the interest cost; another is to make direct grants, which may be in of form of either a large initial appropriation or annual subsidies; still another is for the city to operate the property until it is a going concern and, when additional funds are needed for expansion, to use it as the basis of an issue of revenue bonds. The government sponsoring the project may take responsibility for the financing directly, or it may create an "Authority"—that is, a public corporation without power to tax—to manage the enterprise and service the debt. In the earlier period, when revenue financing was confined almost exclusively to water bonds, the city usually issued the bonds in its own name; but as the concept of "self-liquidating projects" became popular, and the suburbs of many cities grew at the expense of the original city, a rather general practice developed of creating an authority not coterminous with any other unit of government.

Master Plan Desirable

The construction of large public works requires careful physical planning and sound budgeting if shameful waste and serious disappointments are to be avoided. In most communities, the real need in the immediate future is not a report on how to spend more public money — the various pressure groups can be depended upon to make suggestions along this line—but rather a master plan for the development of the entire area.

A master plan is a comprehensive-sive and integrated chart of future land uses which includes the location of factories, department stores, apartment houses, neighborhood shopping areas, and single-family residences, as well as highways, streets, boulevards, water mains, parks, sewers, and public buildings. The preparation of such a plan is a highly technical task, and many local officials will doubtless find it to their advantage to avail themselves of the advice of outside specialists both in the preparation of the original plan, and in passing upon the requests for basic changes.

The master plan should be regarded as a long-run goal. Although an occasional revision may be necessary to meet shifts in fundamental economic conditions, changes should not be made every time a pressure group visits the city hall. In fact, one of the important advantages of a master plan is that it provides a basis for evaluating the numerous requests for zoning changes, many of which are conflicting. It is almost impossible to obtain stable neighborhood developments if the many requests for zoning changes are passed upon piecemeal. Intelligent administration of a sound master plan will also insure that the most important public works are scheduled for construction first, and that the different projects, when completed, will contribute to the over-all development of the community. In a period of rising prices there is considerable danger that the money will run out before anything very useful has been completed. It is obvious, of course, that there is nothing magical about the words "master plan": the preparation of a poor one will be of little value, and the more common sense and efficiency used in the administration of a good one the greater will be the benefit to the community.

Financial Program

A workable program of finance should be made an integral part of the master plan. It is not difficult to service a debt in good years, but the real problem is how to get the funds for debt service in a depression. Before a community embarks upon a program of expansion, consideration should be given to the total cost, type of financing, future debt structure, sources of funds for debt service, program for debt retirement, and provision for emergencies. An incidental but important advantage of a carefully integrated physical plan and financial program will be an improved credit standing, which will tend to reduce the interest cost. Municipal credit analysts, with good reason, regard dilution—that is, the creation of more debt than can be safely serviced —as one of the most serious risks of owning municipal bonds. A plan which limits the improvements to those which will contribute to the community growth, schedules the most important first, and provides a sound method of finance will, of course, help to allay this fear.

A vague recognition of the importance of good management in the successful operation of a public venture sometimes results in the inclusion of so-called protective covenants in the bond indenture which later prove to be unfortunate. If great care is not used in drafting protective covenants, rigidities

will be created which will hamper good management, without providing any real protection against either incompetence or dishonesty. It is impossible to anticipate all possibilities, and management should be given flexibility to meet unforeseen contingencies. It will be most exceptional if twenty or thirty years pass without bringing some emergency growing out of a change in the price level, a shift of population, or a catastrophe such as a flood or a fire.

Debt Retirement

A poorly drawn maturity schedule and the failure to prepare and follow a sound debt retirement program can add needlessly to the hazards of long-term financing. A sound debt retirement program is one which retires the debt during the useful life of the assets acquired with the proceeds of the issue, but makes a minimum addition to fixed charges. This can be done by providing for relatively light serial maturities in the early years, and by exercising the option of calling additional bonds as surplus funds become available. The management should make plans to call a substantial number of bonds each year; but if the calls are increased in years when there is excess cash, they can safely be reduced, or even eliminated, in low-income years.

The only sensible way to retire debt is to make relatively heavy payments in good years. This not only reduces the burden in poor years, but also has the added advantage of draining off cash during prosperity. Since it is difficult to deny the demands of special groups when there is a large balance, excess cash is apt to be a source of serious weakness. There is a real danger of an upward revision of the budget which cannot be sustained, and downward readjustments are almost sure to be difficult and painful.

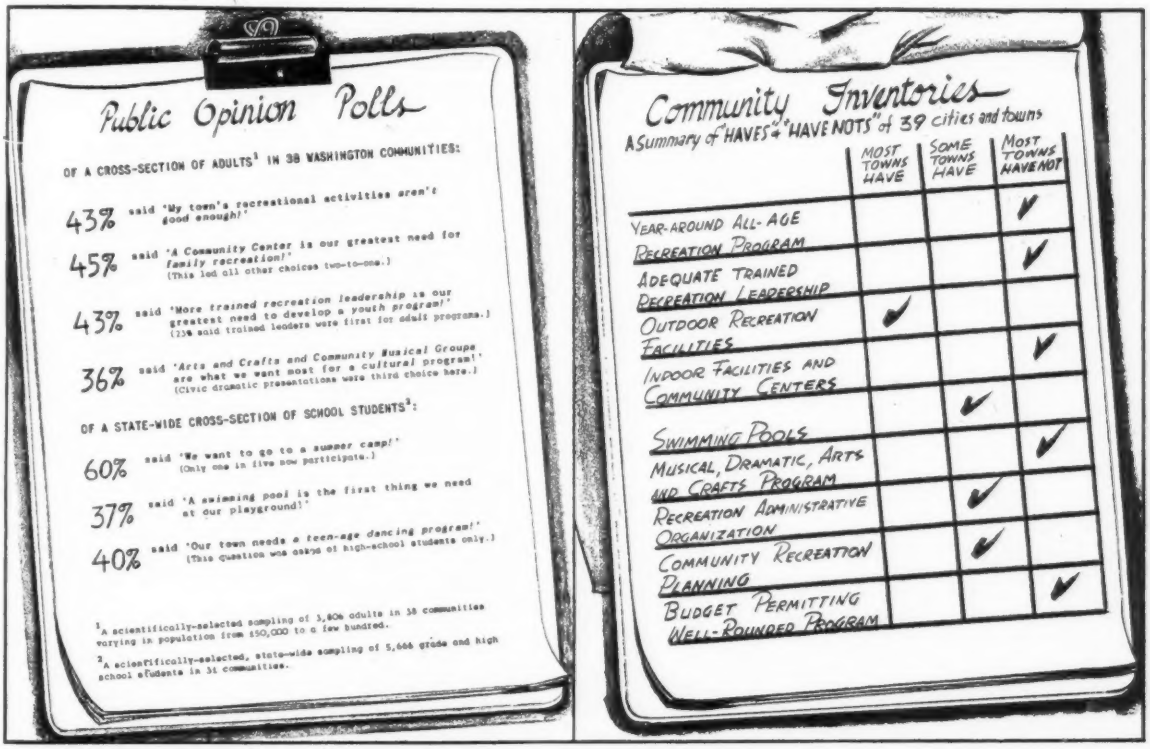
While too little attention is typically directed toward a flexible debt retirement program, too much faith is apt to be placed in provisions of the contracts, which provide for an upward revision of the rates or charges made by the project as a way out of financial difficulties. It is essential, of course, to provide for periodic rate adjustments, but it is a serious mistake to depend upon raising rates to the exclusion of other types of adjustments. An upward revision will protect an enterprise against a shrinkage in net income due to an increase in the price level, but when the shrinkage is due to a decrease in gross receipts the proper course of action is not so clear. The whole problem of pricing the services produced by publicly owned ventures is very complicated, and could well become the subject for extended research.

First Revenue-Bond Bridge Pays Off

UNDER this heading *Engineering News-Record* published in its issue of January 23, 1947, a 3-page article by Clarence W. Hanson, consulting engineer, of Harrisburg, Pa. The article points out that

. . . the Louisville Municipal Bridge, opened to traffic November 1, 1929, initiated the revenue-bond type of financing, since successfully used on hundreds of millions of dollars worth of public works. Its trust indenture was a pioneer instrument upon which most subsequent plans have been based. By taking advantage of low construction costs and decreasing interest rates and by benefiting from greatly increased traffic revenues during the war period, the Bridge Commission has retired all of its bonds and become debt free in seventeen years.

Surveying Recreational Needs


Public Opinion Polls
OF A CROSS-SECTION OF ADULTS[1] IN 38 WASHINGTON COMMUNITIES:
43% said 'My town's recreational activities aren't good enough!'
45% said 'A Community Center is our greatest need for family recreation!' (This led all other choices two-to-one.)
43% said 'More trained recreation leadership is our greatest need to develop a youth program!' (23% said trained leaders were first for adult programs.)
36% said 'Arts and Crafts and Community Musical Groups are what we want most for a cultural program!' (Civic dramatic presentations were third choice here.)
OF A STATE-WIDE CROSS-SECTION OF SCHOOL STUDENTS[2]:
60% said 'We want to go to a summer camp!' (Only one in five now participate.)
37% said 'A swimming pool is the first thing we need at our playground!'
40% said 'Our town needs a teen-age dancing program!' (This question was asked of high-school students only.)
[1] A scientifically-selected sampling of 3,604 adults in 38 communities varying in population from 150,000 to a few hundred.
[2] A scientifically-selected, state-wide sampling of 5,666 grade and high school students in 34 communities.
Community Inventories
A Summary of "HAVES" & "HAVE NOTS" of 39 cities and towns
MOST TOWNS HAVE
SOME TOWNS HAVE
MOST TOWNS HAVE NOT
YEAR-AROUND ALL-AGE RECREATION PROGRAM ✓
ADEQUATE TRAINED RECREATION LEADERSHIP ✓
OUTDOOR RECREATION FACILITIES ✓
INDOOR FACILITIES AND COMMUNITY CENTERS ✓
SWIMMING POOLS ✓
MUSICAL, DRAMATIC, ARTS AND CRAFTS PROGRAM ✓
RECREATION ADMINISTRATIVE ORGANIZATION ✓
COMMUNITY RECREATION PLANNING ✓
BUDGET PERMITTING WELL-ROUNDED PROGRAM ✓

Shown above are summary-charts with some of the conclusions printed in *Recreation for All*, a digest of the report of the Recreational and Cultural Resources Survey of the State of Washington. The survey was conducted by means of polls, inventories, and talks with residents throughout the state. Washington's population grew one-third during the war years, and its recreational problems have been intensified. In addition, the wartime recreational program, which had stimulated new interests and activities, faces curtailment because of loss of federal aid.

Asheboro, N. C.

Builds New Dam

An air view of the new reservoir. Note the road that was inundated and the new bridge that was built to replace it.

. . . and completes a long-range water supply development program.

BARRING the unusual, Asheboro, N. C., is now out of danger of a water famine. Its new 52½-foot dam, impounding 1¼ billion gallons of water, completes a supply program that has occasionally been a nip-and-tuck race with the use of water in this community of 12,000 and gives the city a series of one large and three small reservoirs.

Twenty years ago, the water supply problem was more complicated. At that time, the city had only two small lakes. When the demand went up to more than 200,000 gallons per day this lake supply withered away, and the city found itself hauling water in tank cars until rains made up the deficiency. Following this experience, the city built its third lake and impounded sufficient water to furnish a 1-mgd supply throughout the year.

This took care of requirements until 1941, when another water famine had officials watching these lakes apprehensively, and drastic restrictions of water use had to be instituted. Although the water supply never reached the low point of 1925, when it had to be replenished via the tank-car method, City Manager W. E. Yow and Water Superintendent W. W. Adkins both realized that this was too narrow a margin on which to operate a water service. They realized a dam would have to be built immediately, despite the fact that our nation was at war. Consequently, they asked the board of commissioners to instruct Consulting Engineers Piatt and Davis, of Durham, N. C., to prepare plans and specifications for the new dam. The board at that time consisted of H. H. Grimes, J. F. McCrary, John Neely, E. T. Walton, and W. L. Ward, and served under Dr. L. L. Presnell, Mayor.

Description of Dam

This new dam, recently completed, is approximately four miles northwest of the city. It draws from a drainage area of 17 square miles of timber and cultivated grounds. This drainage area narrows at the point where the dam was built, making it possible to hold the dam length to an economical 350 feet. Engineers Piatt and Davis, who designed it, used a gravity section of concrete masonry construction, building the upstream face on the near vertical slope of 1:25. The crest followed an outline formed by compounding three curves. The first of these, beginning with a tangent to the upstream face of the dam, was on a 2-foot radius and described a 90° arc. At that point, the curve lengthened into a 6-foot radius for a 30° arc and then lengthened again into a 20-foot radius for a second 30° arc. To form the spillway, the face was extended as tangent at this point on a slope 30° from the vertical, until it approached the natural ground. Here, it eased into the horizontal by a curve with a 20-foot radius extending for 60°. The spillway extends for a length of 120 feet and is designed to be gravimetrically stable against a surcharge of a 6-foot head of water overtopping the dam. The tailrace of the dam is designed without a formal stilling basin to exhaust the energy of the falling water but is sloped on each side to throw the water to the center of the stream. Inasmuch as the stream virtually flows on bedrock, there is little danger of undercutting and damage to the dam. The masonry consists of concrete designed to produce a strength of 2,000 psi with the use at the inner portions of the dam of cyclopean aggregate, which is excavated from the foundations.

The dam has two intake ports, one a 20-inch and the second a 24-inch, both located 22 feet below the crest. These

deliver water to the pumping station through a 20-inch cast iron pipe, from which water is pumped through a 16-inch force main by a 125-hp De Laval centrifugal pump to the filter plant in the city. The pump will deliver 1,250 gpm against a 310-foot head and has its suction line protected by an Elliott strainer. Each port is controlled by a manually operated Chapman valve sluice gate operated from a platform at the top of the dam. The reservoir can be dewatered by the action of a conduit located in the base of the dam at an elevation 10 feet below the intake ports. The dewatering port also is controlled by a Chapman valve sluice gate that is hand-operated by a floor stand from the same platform as the raw water intake ports. The dewatering port is protected against clogging by a coarse bar screen consisting of 9-inch concrete bars mounted vertically, yielding 3-inch openings. The raw water ports are protected by sectional trash racks of ⅜-inch steel bars with the bars mounted vertically. This makes it easy for them to be cleaned from the surface by hand raking, and easily removable or replaceable.

These four impounding reservoirs give Superintendent Adkins a great deal of flexibility in water supply operation and provide an opportunity for careful manipulation to give most economical results. Because of the existence of more efficient equipment, some economies in operation can be made by drawing from the new lake. However, Mr. Adkins plans to use lake #1 as much as possible because of its higher elevation. Lake #3 can accordingly be relegated to reserve purposes, and lake #2 can be used to furnish additional storage for lake #3.

The yield of the combined system of reservoirs is approximately 6½ or 7 mgd. The yield of lake #1 probably does not exceed 50,000 gallons per day in a normal year. However, the new lake will furnish from 5½ to 6 mgd, and the combined yield of lakes 2 and 3 will approach 900,000 or a million gallons per day.

The elevation of lake #3 is 10½ feet higher than the new lake, and the elevation of lake #1 is 61 feet higher than lake #3.

Asheboro's raw water is treated in a 1½-mgd filter plant completed in February 1941. This plant receives the water through a 12-inch steel main, measuring it as it enters through a Simplex venturi meter. It administers alum and lime by Wallace and Tiernan dry chemical feeders, and also activated carbon when required for taste and odor control. To produce a floc, the plant uses an air mix in a chamber 36 feet long that provides a 30-minute mixing time. The floc then goes to a flocculation and settling basin, with over-and-under baffles at the inlet, that provides 5½ hours of settling time. After this, it goes to two 750,000-gallon-per-day filters, equipped with surface washes to prevent the formation of mud balls on the surface, and then proceeds to a 1-mg ground storage reservoir. Ultimately, it travels to a ½-mg R. D. Cole overhead storage reservoir for distribution under pressure, throughout the city. Rustop cathodic protection guards this tank against corrosion.

The plant, also designed by Piatt and Davis, was built as a PWA project and provides the city with adequate treatment and distribution facilities. As sufficient land was acquired to permit its expansion to 10 mgd, the new impounding reservoir insures that an adequate supply will always be available to the city, as long as its growth remains substantially in line with present trends.

Above: The dam was situated in this narrow gorge to form the new impounded supply. Asheboro now has four supply lakes. Above, right: Superintendent A. D. Adkins looks over the pumping equipment in reservoir.

Right: The treatment plant that receives the supply from Asheboro's chain of lakes. Water is stored in an overhead tank for distribution under pressure throughout the city. Far right: Inside the plant, the operator takes a hand at the filters.

Bacterial Classification of Bathing Beaches

CONNECTICUT has established a tentative standard divided into four classifications in order to make a health analysis of bathing waters. The standard uses the coliform bacteria as the criterion because their presence indicates pollution. The classification is as follows:

	Most Probable Number of Coliform Organisms per 100 ml.
Class A.....	0-50
Class B.....	51-500
Class C.....	501-1000
Class D.....	Over 1000

Warren J. Scott, Director, Bureau of Sanitary Engineering in the Department of Health, states that some thought was given to the idea of setting up tentative classifications such as Good, Fair, Doubtful, Poor and Very Poor, but this was discarded because of the belief that the classifications would be too arbitrary and the results might be misinterpreted.

The table was taken from Mr. Scott's report appearing in the *Connecticut Health Bulletin* for January.

Planning Report Gets Action

York, Pa., Revives Planning Commission as Result of Newspaper Campaign for Action on Comprehensive Planning Survey Report.

By SAUL MILLER

PLANNING in York, Pa., is receiving a shot-in-the-arm as the result of last month's revival and appointment of a city planning commission. Harry E. Sharkey, assistant editor and columnist of York's leading newspaper, *The Gazette and Daily*, which has waged a long and vigorous campaign for planning, was named chairman of the commission. Members of the commission have already begun studies of major city problems in an effort to correct chronically bad conditions.

The basis for much of the campaign conducted by the newspaper was a comprehensive planning survey completed last year for the city and county of York by a firm of engineering consultants. This survey, known as the Baker Report, gave the people of the area a first glimpse of the assets and liabilities of their communities, and is being used as a guide in the work of the revived planning commission.

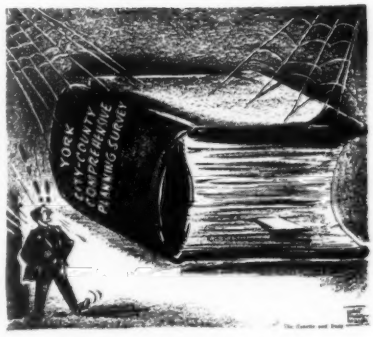
One of its key recommendations was that both the city and county create planning and/or zoning bodies to work out the general proposals into a concrete, detailed program of action. Although the city of York has now acted, the county has as yet taken no such step.

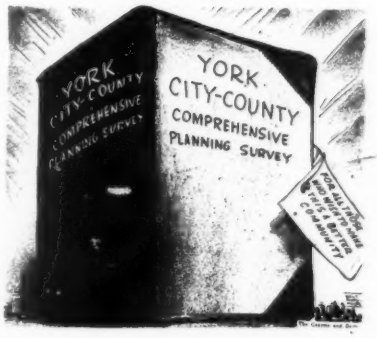
Tackling the Planning Job

A study of what happened in York, where discussions and interest in post-war planning were more than a fad and were converted into a cash outlay to start community planning on its way, will help to indicate the problems faced by a typical American city and county of medium size in beginning to take inventory and planning an overhauling job.

York, with a population of 60,000, serves as the county seat of York County, with 180,000 inhabitants. Located in the southeastern corner of the state, it dates back to 1741, and many York residents can trace their ancestry back to the early German settlers.

Post-war planning got its first foothold in February 1944, when a group of merchants and manufacturers, closely allied with the local Chamber of Commerce and manufacturer's association, formed the York County Postwar Planning Committee. The avowed purpose of the organization was to plan a series of community projects to start with the end of the war, to avert possible unemployment resulting from the return of large numbers of veterans and the reconversion of industry to peacetime production.





These cartoons convey two important attitudes in the community: first, that the report can help make a better community; second, that allowing the report to fall into disuse is criminal. These cartoons, plus a series of explanatory articles appearing in York's morning paper, *The Gazette and Daily*, have done much to popularize the planning report and its contents.

After a few months of floundering, the committee decided it would be best to employ planning engineers to prepare a survey and have the city and county split the costs—$25,000. It was thought that public financing of the survey would be more likely to lead to action than a report prepared by a non-public body.

Preparation of Survey

The city and county went along with the proposal, voting the necessary funds. The Baker Engineers of Rochester, Pa., were shortly thereafter retained to make the planning survey. In August 1945 the engineers opened a local office and went to work plotting the present community in maps, charts, and tables. Five men spent eleven months preparing the *York City-County Comprehensive Planning Survey*, a bulky affair, running to 752 pages, 72 illustrations, and 77 tables. The York County Post-war Planning Committee has arranged for printing it, complete with four-color maps, so that the recommendations will be more widely available to the general public.

Theme of Report

The general theme of the report, presented to the city council and the county commissioners in July 1946, was that there had been an uncoordinated and uneconomic growth in the past which could be corrected in the future by careful, over-all planning. The great need for a planned community was pointed up by the report's finding that "the York area in the community development of the last three decades has become alarmingly stagnated. There are deficiencies and outworn public facilities and services in practically all phases of the community system. It has been the practice to allow the needs of the community to be handled by sporadic interested groups or agencies."

This was the general indictment. Specifically the charge was hammered home point by point. The four-part re-

1. The old housing pattern in York —row housing, lack of air and light, mixed land uses—is typical of the city.

2. York is cut through with alleys, the breeding spot of all the city's slums.

3. Planned housing breaks away from overcrowded land use and provides the basic necessities of modern living. Future housing in York must develop along the latter pattern, the planning report asserts.

4. Railroad tracks at ground level intersect all of the major city streets, causing a major traffic headache. The planners recommend an elevated structure to divert traffic through another. non-residential portion of the city and to take rail traffic off street levels.

5. The York Chamber of Commerce is on record to take action on the bulkly report.

6. The one-room schoolhouse—Drastic consolidation of York County schools and school districts is recommended in the planning report to eliminate these outmoded, antiquated, and inadequate schools that dot the county. Steps have already been taken to consolidate neighboring school districts; many other steps still remain before the county schools are brought up to date.

port touched every aspect of community life.

Under the heading, "Basic Data", the first section examined the history, geography, resources, population characteristics, land use, and economic base of the area.

The second part described and evaluated "Community Services and Organizations," covering safety, welfare, cultural, and health facilities of the city and county.

The third section, "Physical Development of the Community," was a study of housing, streets and highways, transportation, schools, parks, utilities, soil conservation, and rural developments.

In the final chapter—"Program"—the financial structure was analyzed and a project series outlined.

What originated as a series of plans to set up projects to handle unemployment became a comprehensive plan for changing the face of the city and county. While the survey could be used to handle any delayed-action depression and unemployment, its primary function, when completed, was to act as a guide to eliminate the basic faults of uncontrolled growth. To accomplish this, it created a long-range planning schedule.

Long-Range Objectives

The engineers listed ten long-range objectives in their introduction to the survey:

Orderly development of the community.
Stabilization of property values.
Improving the environment of residential areas.
Facilitating access to business centers.
Relieving traffic congestion and planning safe streets and highways.
Providing public recreational areas easily accessible to residential neighborhoods.
Creating a system of schools to meet present and future needs.
Developing rural areas through conservation.
Zoning and extension of urban improvements.
Implementing action on the recommendations by a financial analysis and a coordinated program of projects.

The survey touched only on the physical problems of planning, avoiding the important phases of policy-making and administration. These aspects were left to the local governing heads. Although the report stresses in almost every chapter the need for taking action on given recommendations if the $25,000 investment is to prove fruitful, whether or not this is done rests ultimately with the people who elect the public officials and who must decide what they want in the future community. Through their elected representatives they made a down payment on future progress by authorizing the survey; the fate of the investment rests with the people.

Made Facts Available

The survey's greatest contribution is the collection of all the known facts on all facets of living in the city and county and the listing of them in one place: an easily accessible report. Its further contribution is that it examined all these facts in the light of established standards of modern life and in comparison with cities of similar size and containing somewhat similar conditions. The results indicated York's relative position—where it is below standard, where it surpasses the established marks. Basically, the report is not a cure-all in itself. It merely points a way out of a maze of complicated problems.

The liabilities of York, Pa., can be chalked up against most American cities—slum housing, congested traffic, antiquated schools, cultural and welfare deficiencies, insufficient public health work, etc. Hundreds of cities struggling with similar problems have yet to compile an inventory of their assets and liabilities upon which they can base recommendations and plans for improvement resulting in modern, integrated communities.

York is fortunate. With the facts available, the engineers and planners created a program of corrective projects—nearly 150—estimated at a total cost of $16,449,000 and entailing 785,460 man days of work.

Recommendations

Highlights of the survey's recommendations are:

Using the master plan as a guide to all future planning work. This plan is a detailed map indicating the future land use of all community functions—homes, stores, schools, streets and highways, public buildings, and parks. The plan is based on setting up neighborhood units complete in all basic needs.

Creation of slum clearance authorities to redevelop several blocks at a time as residential superblocks with garden apartments, and single family and semi-attached houses. In addition, enactment of housing ordinances, building codes, and sub-division regulation to keep housing healthy, safe, and attractive.

A program of 111 *park and recreation area projects* in the city and county aimed at setting up at least one park and/or recreation area in each urban community. The city park system would be keyed on nine "neighborhood parks" with a series of play lots, playgrounds, and play fields attached to each and comprising an integrated unit. The over-all program includes large county parks and reservations and the redesigning of one centrally located park in the city as a cultural community center.

Relocation of two fire companies, passage of a building code with proper fire prevention practices, and establishment of fire limits in congested commercial areas are measures proposed to decrease the fire hazard. More police, better training, and a prison farm instead of a jail are recommended to improve police work.

Starting a bookmobile library service for rural areas, creating more branch libraries, a new children's library, and classroom collections of books in rural schools are recommended to improve library and cultural services.

A drastic consolidation of the county school system from seventy school districts to twelve and similar consolidation of schools is proposed to eliminate the one-room schoolhouse. A central place in each district would serve as a secondary school location as well as housing health clinics and facilities for adult education, special meetings, concerts, and socials.

City schools need the same pruning, according to the planners. They propose to reduce elementary schools from twenty-one to eleven and improve six other schools in a six-year program of consolidation and modernization.

Coordination of county roads, improvements, and new construction are the engineers' proposals for a better road network for the farmer. In the city, they propose a series of connecting belt parkways meeting the major highways on the outskirts. The plan is to divert traffic along the outer rim of the city and prevent route changes from congesting traffic within the center. A new expressway through the city is proposed to take the load off the main north-south route, and an alternate east-west route is to be set up. New bridges and general street improvements throughout the city are suggested.

Diversion of the main railroad line through the city into an elevated spur is advised to ease the transportation and traffic situations. In addition, a new rail terminal as well as a union bus station are proposed, to take inter-urban buses off the streets and provide a central exchange point.

The financial section of the report recommends that the county borrow up to 30% of its capacity and the city 60%, to put through a program of improvements. The figures are based on the excellent financial position of both groups and on the fact that neither has borrowed anywhere near its capacity.

Shortly after the report was completed and presented to the local governments, *The Gazette and Daily* began publication of a series of nineteen articles on the various aspects and subject matters of the report, using full-page layouts and reproducing charts and maps. These articles were later reprinted on the back of an annual calendar issued by the newspaper, and were also published in pamphlet form.

This step helped create interest in a detailed and intricate report which few people would ordinarily read. It also started a series of discussion groups and lectures on the meaning and application of the survey to local problems. While the survey has remained a non-political issue so far, it probably will become the basis of future political campaigns in the city and county.

MERCHANTS Solve Allentown's PARKING PROBLEM

By EDDIE ROTH
Call-Chronicle Newspapers
Allentown, Pa.

—by forming a corporaton to establish a chain of parking lots in the city's business district.

PARKING "down town" these days is a perplexing problem, especially when you consider the fact that Allentown's business district, which has parking space for approximately 2,000 automobiles at the curb and 2,000 cars on lots and in garages, serves a trading area of a third of a million people who drive — and park — 65,000 cars. And recently, it seemed, they all tried to park and shop at one time.

That's why there has been more than passing interest in the recent press announcements of the organization of a new firm called Park & Shop, Inc.—a group of merchants who have formed a $300,000 corporation to unravel a business section parking snarl.

Its goal is to provide additional space for 1,000 (and eventually 3,600) automobiles within 300 steps of central city stores. Little has been told about Park & Shop, Inc., except the bare announcement that it is here, but organizers behind the plan feel it may someday be referred to as "the dream that saved a city," at least its business district.

The germ of the idea was sown three years ago when a number of forthright businessmen approached one of the editors of the Call-Chronicle Newspapers to discuss a means of facing one of the city's biggest post-war problems.

In the midst of the war, parking was little trouble in Allentown. Parking lots, even those in the heart of the central city, were doing a poor business. In many cases, landlords, faced with the facts, were forced to reduce lot rental fees, at a time when property values were soaring.

However, to a handful of farsighted individuals this easing of traffic and resultant decrease in parking demands put the spotlight on what the city's post-war problems would be when cars by the million would again roll off Detroit production lines, thousands of them finding "homes" on Allentown streets. Car production has lagged far below original forecasts, but Allentown nevertheless is in the throes of its worst traffic problem in history, and business is being strangled because of it.

The little committee which three years ago tackled the problem in Allentown included Harvey L. Farr, president of Farr Bros., Charles E. Folwell, Sr., president of Zollinger-Harned Co., and Donald P. Miller, secretary and assistant managing editor of Call-Chronicle Newspapers, Inc.

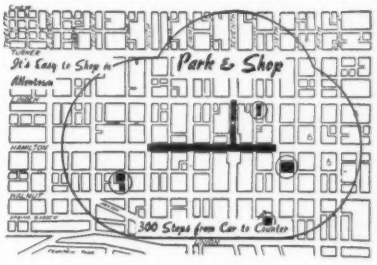
They realized the solution was one which should rest in the hands of the municipality, the landowners and the merchants. They knew, too, that it was already late, that there was too little time to "protect" the business district and its property values through ordinances and municipal planning.

The announcement two years ago that Sears, Roebuck and Co. was moving its big store from the congested area to Seventh and Allen Streets caused merchants to open their eyes. Other business removals from the center of the city made merchants realize that something had to be done quickly to save the business district. Without waiting for final action on their part Messrs. Farr, Folwell, and Miller—with their own capital—surveyed the situation and went so far as to make commitments for land.

The result of their forthright action was the purchase of four lots and the organization of Park & Shop, Inc., a name which Allentonians will hear a lot of in the future.

Individual stores have long used the park-shop plan to attract customers, and several American cities recently instituted free parking on a big scale for the same reason, but none of them has delved into the field of establishing a chain of lots to be operated on a commercial basis, as they will in Allentown. Any motorist will be permitted to park on a "Park & Shop" lot, but the privilege will be free only to those who patronize a member store.

The "Allentown Plan," though still in its infancy, has already attracted nation-wide interest. National wire releases have also indicated that cities



This map of central Allentown shows the heart of the city's business district and the 1,000-foot radius projected from it. Within this circle Park & Shop, Inc., plans to establish a chain of eight or ten parking lots to provide at least 1,200 car spaces. Four of the lots already leased or purchased by the merchants' corporation are indicated by the blackened squares.

elsewhere are casting glances Allentown's way, perhaps with the idea of copying the plan. At any rate, indications point to a successful venture when Park & Shop, Inc., opens for business May 1.

Thorough Study Begun

But Park & Shop, Inc., didn't "just happen." Work on the plan to save the city's business district began in the fall of 1943, when the committee launched a thorough study of Allentown's parking problem in the business district. Statistics compiled in nation-wide surveys had shown that shoppers are willing to walk 1,000 feet, so they drew a line on the city map from Sixth to Ninth on Hamilton Street, and Hamilton to Linden on Seventh, and from it took a radius of 1,000 feet. Commercial parking, they felt, was economically practical within this circle.

Successful operation of the plan hinges on four major points, or aims, as follows:

1. To prevent land now in use for parking from going into other uses. This would assure a nucleus for the proposed chain of lots. During the com-

mittee's lengthy study, practically every mid-city parking lot had been "turned over" in sale at least once.

2. To devise a method of operation whereby available lots could be merchandised more efficiently by increasing the turnover of their customers.

3. To acquire marginal land that has worn out its usefulness, and to tear down buildings whose demolition would mean no loss to the city.

4. To have enforced the curb parking laws now on the municipal books, so that the 2,000 parking spaces in the business area could be used more efficiently.

This latter point is highly important. Simply and purely it would mean that businessmen, store owners, and employes may no longer park where they work. They must realize in years to come that they will have to walk anywhere from two to four blocks if they want to drive to work and leave their cars on the streets between the hours of 8 a.m. and 5 p.m. Otherwise, they'll be depriving customers of the business district space, "killing the goose that lays the golden egg."

Enforcement of curb parking, the committee believed, could be accomplished through use of the parking meter, though members resisted the thought of meters on Hamilton Street for two reasons. Hamilton Street, with limitations on the size of its marquees, and its novel boulevard lights and beautiful store fronts and display windows, is one of the business showplaces of the nation. Then, too, the clearer the street is kept for moving traffic, the better its public transportation system will be. Undoubtedly this is one of the major factors in solving the parking problem, because in years to come it probably will be increasingly practical to use public transportation.

The committee worked quietly and within the past year purchased or leased over 400 car spaces as a nucleus for the chain of eight or ten parking lots necessary to carry 1,000 to 1,200 cars. It also realized that in five or eight years from now these lots can be expanded by construction of new, open concrete ramps that will triple the parking space. Operation of these units will call for a subsidy for customer parking similar to that which the city's larger stores inaugurated. Under this system, stores stamp the parking tickets of those customers making purchases, and lot owners refund the parking fees on stamped tickets. Under this plan, stores, both large and small will be able to provide parking space for their customers.

Park & Shop, Inc., projects a $300,000 capital investment on the part of 100 merchants who will own and lease lots, or license present operators to work in cooperation with them. More than half of this $300,000 has already been subscribed by ten of the larger stores, and to prove they really mean business, Park & Shop, Inc., plans to spend $10,000 a year for the next five years to sell customers the idea that "It's easy to park and shop in Allentown."

Is the Public Official Personally Liable?

IF YOU are a public official, you doubtlessly know that, in general, the laws are so drawn as to make you responsible for faithful performance of duties of your office, including the responsibility for receiving, collecting, and safely keeping all monies and property coming into your hands by virtue of your office, and, again pursuant to law, for disbursing such funds. Further, this responsibility extends to the point where you maybe liable for acts or omissions of your deputies and subordinates which have been committed beyond the authority of your office. The laws generally demand that you shall keep proper accounts in prescribed fashion and that you will turn over to your successor all property, including monies other than those legally disbursed during your term, and all securities, books, papers, and records pertinent to your office. Consistently, so much of your administration is governed by statute.

On the other hand, you are entitled to personal protection against loss; and in so protecting yourself you are further safeguarding the interests of the public. If you do not already have such insurance protection, you should bring this to the attention of the governing authorities for appropriate action. Failing to do this may jeopardize your personal assets, and you may find yourself in the position of having to make good any public funds lost through failure of a bank acting as a public depository.

No formula exists by which you can ascertain the exact amount of the bond, or bonds, you require. Exercising your own judgment, perhaps in combination with some competent assistance by a bonding company representative, is the best-known method. Naturally, you must keep in mind the possibility, however remote, of dishonesty even though no actual cash is handled. Undiscovered losses can accumulate over a period of time to fantastic figures. Also, your own liability may include the hazards of non-performance of duties by your deputies and employes.

Though the need in these fast-moving times for modern and efficient accounting and bookkeeping systems is obvious, instances are many in which antiquated systems linger in the public offices of otherwise thoroughly up-to-date and progressive communities. If an outdated system, or one of questionable efficiency, is employed in your office, you are entitled to have a modern system installed or your present system overhauled and its faults corrected. If you believe that the system in your office can stand a change for the better, approach the representatives of manufacturers of accounting machines and systems equipment. They have installed many modern accounting systems, and their municipal specialists can advise wisely and to the benefit of your town as well as yourself.

In numerous cases, catering to tradition rather than to the needs of today has resulted in staggering losses to such communities—losses that might never have occurred had an accounting system been in operation that cut down on the number of errors and made it even more difficult to conceal shortages.

Just as many newly elected officials are seating themselves in their as yet not-too-familiar offices, a timely brochure, "Is the Public Official Personally Liable?", appears under the auspices of The Towner Rating Bureau, Inc., 60 John Street, New York City 7. It talks directly to public officials. If somewhere in your department public money is received and disbursed, the "you" in this monograph, condensed here, means YOU.

Better Government Through Public Relations

By EDWARD L. BERNAYS*

THE American city today is a complex social-economic pattern for achieving the aims of a democratic society. It strives to increase the general welfare of its citizens through public health, safety, legal security, education and the other factors of wholesome, efficient living. Not so long ago municipal government was largely a system of politics, spoils, and patronage. Today the city is the combined progress of all its citizens.

More than that, the city is an integral part of its state and of the whole nation. What happens in Natchez, Miss., affects the entire nation. In the same sense, every city is tied to every other city in the world. When a waterfront strike takes place in New York, all countries watch the results anxiously, for they may feel the consequences. Potentially, every city is always in the spot-light.

Fortunately, the interest of the general public in city affairs has spread and grown as the cities themselves have grown. Not long ago civic affairs were the concern only of the few people who had direct personal interest in them. For the main part they were the people who sought personal power and profit. Few people had a broad social concept of their local government. Today, municipal officials know that the entire public is interested in what city government does and accomplishes. The public is showing an increasing curiosity about appointments, finances, budgets, and all departmental activities.

New Concepts of Democratic Leadership

Today the city has, therefore, an important public-relations responsibility. This means that leaders in the city government must understand the needs and opinions of the public and interpret the city to the public. Because the city cannot function efficiently without the cooperation of its citizens, the public must be made a partner of civic government. A modern approach to public relations must be used to maintain and strengthen the consent of the governed. Leadership of a city can go only as far as its following wants it to go.

History recalls that Theodore Roosevelt was one of the first leaders to recognize the value of a strong liaison with the public. His press conferences were a new development in the concept of democratic leadership. In cities, the city hall reporter was often the only link between the public and the city government. His function was to watch for news, to report crimes, accidents, and scandals. Municipal government had only a haphazard approach to the public. For example, a muck-raking news story might feature a dirty restaurant to promote circulation. Today, however, the unsanitary restaurant featured in the papers is not primarily a news story. The pictures of evidence and the arrest of guilty proprietors are used by the city's public health department as part of a planned campaign to clean up the entire restaurant situation. Civic public relations today becomes a tool for better government.

A public relations program for a city has a triple function. It must throw a clear light on the government's activities in order to be of value to the government itself. It must interpret the government's aims to the people to secure their interest and action. And, lastly, it must interpret the public needs and desires to the government.

Determining Objectives

The first task of any effective public relations program for a city is to determine objectives, which vary with the city and with specific citizens. The objective may be to seek from the city's voters greater support for programs in health, education, appointment of first-class officials, and increased budgets for teachers and other departmental functions. Or it may only be to win the support of the city's voters so that the party and its officials may remain in power.

Whatever the goals, the public relations program must base its efforts on favorable actions of government itself. What the government does, not what it says, is the important factor in success.

When the responsible officials—mayor, city manager, or city council—have determined on public relations goals, strategies for reaching these goals can be worked out. Strategy is the how and who of the campaign. Who will symbolize ideas for which the city is striving? How quickly, or how slowly, must the campaign proceed? Shall there be a Good Health Week, or a Cleaner Streets Day, or a Drive Carefully Month?.

Importance of Timing

Timing is important. Experience, skill, and research will reveal whether or not the public will accept an idea today, or whether preliminary educational work must be done. Many good programs for the public welfare have fallen down because they were prematurely launched.

After the strategy has been carefully planned, it is important to determine what the themes or appeals to the public are to be. Themes are the reasonable expression of aims—the angles, the appeals—they are the emotional spur to acquiescence. Themes are not merely slogans. They are the compressed, honest packages containing the ideas as to why a program or project is desirable and why the public should support it. The next step in the public relations campaign is organization. Who is to carry on the work with the city? Who is to have the responsibility for acting as the central organization to ensure that activities are carried on?

Planned Events and Research

Techniques for carrying out a public relations program also include planned events which are sufficiently interesting and important to jut out from the ordinary routine. The events make news and are welcomed by all the news-covering media of communication. Newspapers will assist good government by reporting events and by presenting factual information and departmental news. Radio stations and commentators are likewise valuable aids in a city program. Clubs and groups of all sorts, Rotary, Kiwanis, Lion, City Clubs, Womens Clubs, church groups and the like will carry messages in their own way to stimulate leadership interest in the city's activities.

Isolated events and sporadic publicity

*EDITORIAL NOTE—Edward L. Bernays, B. S., is Counsel on Public Relations, a profession he was instrumental in founding. *Time* has called him U. S. Publicist No. 1. He has served as Counsel on Public Relations to governmental units, trade associations, and profit and non-profit organizations. He is the author of *Propaganda, Crystallizing Public Opinion, Speak Up for Democracy, Take Your Place at the Peace Table*, and editor of an *Outline of Careers* and many magazine articles. He is engaged in the practice of his profession in partnership with Doris E. Fleischman in New York.

are of little value. A good public relations program for city government demands continuous effort to keep in contact with the public. Underlying this public relations program must be continuous and careful research of the actual functioning of the city. If the leaders do not keep their house in order, no public relations program will protect them from the possibility of unfavorable notice and attack. Any municipal public relations program must be based on activities that are in the public interest.

Several books have been written that are helpful as guides to effective public relations planning, strategy, and techniques. Those who are interested will find references to them in two bibliographies on public relations—one published by the University of Minnesota Press, the other by the Princeton University Press.

Chlorine Dioxide Has No Corner on Polio Inactivation

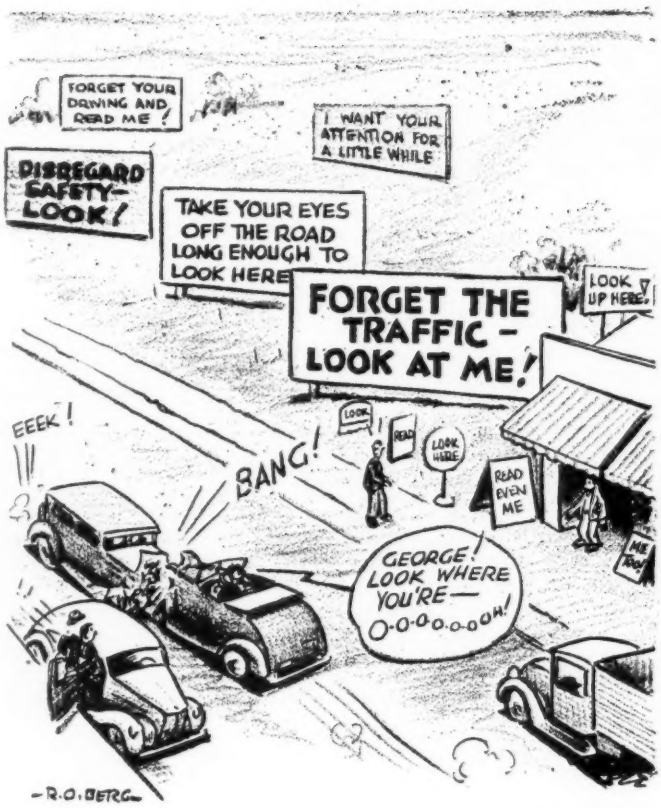
TO CORRECT some misinterpretation that has arisen from the story on chlorine dioxide and its application to the Jamestown, R. I., water supply (see THE AMERICAN CITY, page 106, November 1946), G. P. Vincent, Technical Director, Mathieson Alkali Works, New York City, points out that the effectiveness of chlorine, chlorine dioxide, or a mixture of the two, provided that a sufficient free chlorine residual is maintained, is for all practical purposes the same.

The exact statement that prompted the observation regarding the effect of free chlorine residuals on the polio virus came from G. M. Ridenour and R. S. Ingols of the University of Michigan School of Public Health in the June 1946 issue of the *Journal of Public Health*: "It appears that the effectiveness of the free chlorine residual is independent of the type of chlorine-bearing compound as long as the equivalent oxidation potential of free chlorine exists."

The investigators also mentioned that an ozone concentration equivalent to 0.1 ppm of free chlorine would produce the same results.

Allan Davenport, general manager of the Jamestown Water Co., and author of the story that appeared in November, states that he did not intend to imply that chlorine dioxide is more effective than any other oxidizer, but merely wished to point out that it is effective, and that its use insures that the Jamestown water is free from the polio virus.

In any case, this is only an "added feature," since no conclusive evidence exists that positively links polio with the water supply.



CARTOON BY COURTESY OF NATURE MAGAZINE

Can Billboards Promote Highway Safety?

THE answer to this question, in the opinion of the National Roadside Council and of the American Nature Association, is an emphatic NO.

On his personal page in the March issue of *Nature Magazine*, Editor Richard W. Westwood, the Association's president, comments as follows:

There is some pretty fuzzy reasoning in the endorsement by the National Committee for Traffic Safety of a program of highway billboards to teach safety. Actually the billboard itself is a menace to highway safety. It may take only a second to get some sort of safety or other message from an outdoor advertising sign—usually it takes more—but, in a second, at sixty miles an hour, an automobile travels 88 feet. And in that particular second, the attention of the driver has been diverted from the vital job of driving. Hospitals, cemeteries, and auto junk yards contain many by-products of such inattention. There is no question of the necessity of constant highway safety education, and there is no lack of media through which its message may be carried. But the billboard is certainly not one of them.

Danbury Gets WAA Snow Blower

A rotary snow plow obtained from the War Assets Administration is helping George J. Gildea, superintendent of water and public works, Danbury, Conn., solve snow removal problems. The plow, a Bros rotary Sno-Flyr, is mounted on a FWD model YU 6-ton truck and is powered by a Waukesha engine. It is capable of filling a 5-yard dump truck with compressed snow in 30 seconds and can be used to scoop up snow at the curb and chute it into waiting trucks. It will handle hard banks of snow as easily as its does loose snow.

In order to use the plow efficiently in downtown areas, Superintendent Gildea has instructed business houses to shovel their sidewalks clear of snow, emptying it into the gutters so that the blower can pick it up more easily. He reports further that plans are going forward that will enable the blower to help clear the local airport of snow after performing street clearing tasks.

The plow, although listed by the War Assets Administration as "used", actually is new, having been driven only from one base to another, with the rotary unit never having been used.

The Delaware Bridge back in service after having been abandoned for eight years.

Bridge Saving

Anderson, Ind., rehabilitates a 40-year-old- bridge

EIGHT years ago a fire burned out the floor of the Delaware street bridge at Anderson, Ind. The bridge had been built in 1904, with a truss span of 216 feet and an approach span of 402 feet. It was narrow by present standards, but it connected two important sections of the town and had seen a lot of service.

Officials decided that the damage done by the fire was great enough to warrant abandoning the bridge, but the city did not feel financially able to build a new one.

However, two years ago Mayor C. D. Rotruck called in City Engineer Virgil Lee and asked him if there wasn't something that he could do about that bridge. Engineer Lee made his examination and reported that he thought there was. By using a lightweight open-mesh flooring and carefully reinforcing the structurally weakened members, he felt that he could put back into service that convenient link that the city had been without for so long.

Since the project was of a repair nature, Engineer Lee set the work up on a force account basis and retained the Indiana Bridge Company, Muncie, Ind., to make all structural repairs and necessary reinforcing and to lay the floor. The bottom-cord members of the main truss (pin-connected type) were strenthened by inserting four 1-inch-diameter rods in the end panels and two rods of the same diameter in the intermediate panels. This was accomplished by placing U-clips over the pins and tightening with turnbuckles. The approach span was strengthened by diagonal bracing, using 3-inch angles welded to the floor girder system. A new top-cord was placed on the built-up girder of the approach span.

Because of the design of the bridge, it was necessary to place a floor of light weight so as to utilize the maximum carrying capacity of the bridge. It was found that a steel mesh floor-decking, weighing 15¼ pounds per square foot, would meet the needs. This material was purchased from the Standard Steel Spring Company, Gary, Ind., and placed by the Indiana Bridge Company. The flooring material was furnished in panels 2 feet 1 inch wide and 18 feet 5 inches long. The panels were joined in the field by rivets and the floor welded to the floor beams. Nine-inch channels were used on each side of the bridge floor as guard rails.

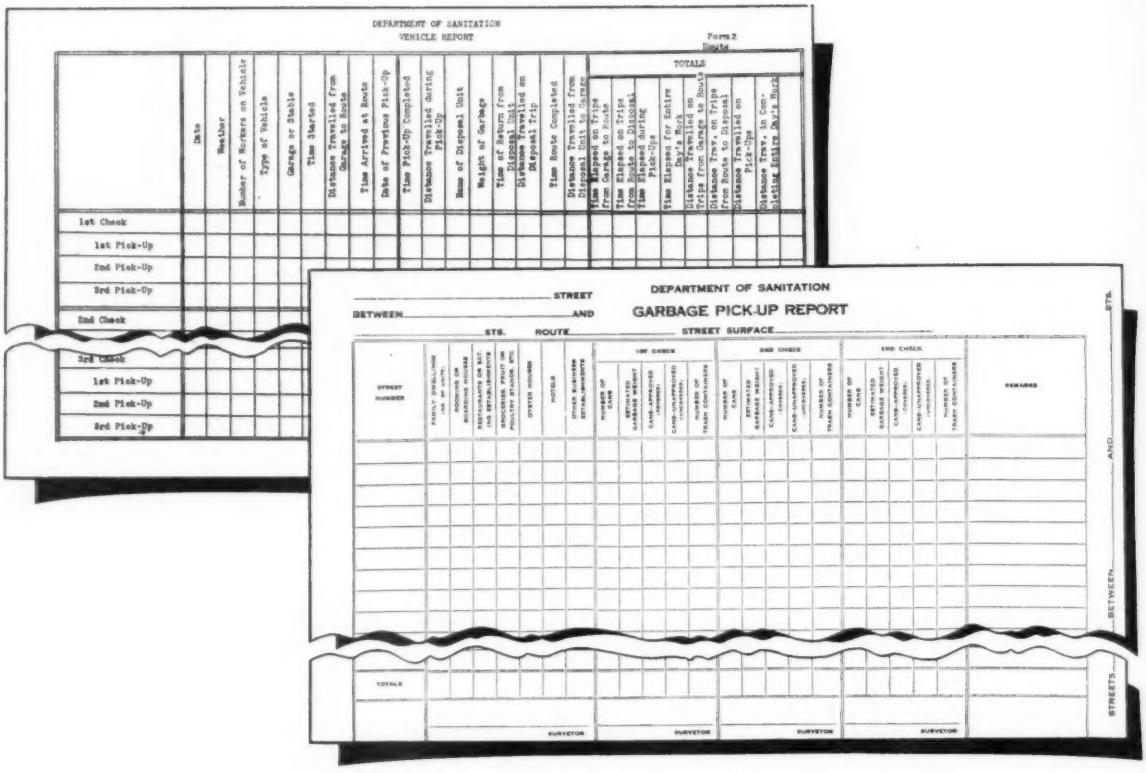
Diagonal sway-bracing across bottom gives strength and stiffness to the floor.

Four 2-inch-diameter rods tightened by turnbuckles strengthen outer cords.

The total cost of the project when completed will approximate $47,000, to be paid from the gasoline tax fund.

FOR MORE EFFICIENT PLANNING OF ROUTES AND METHODS

New Orleans Studies



Surveyors made an accurate analysis of the collection vehicles used by New Orleans and tabulated their findings on the charts shown above. It gave them an opportunity to evaluate the efficiencies of each. The "task" method of assigning garbage and refuse duties calls for careful study of the work that each garbage route involves. The charts made it possible for the surveyors to evaluate the work and rearrange the areas of collection to equalize the routes.

THE "task" system of refuse collection used in New Orleans for many years, by which a crew is assigned a specific quota of work instead of a number of hours' employment, has much in its favor. It gives the crews a sense of independence and responsibility and encourages dispatch in the performance of their work. To be effective, however, it should carefully balance these tasks so that each crew is assigned an equitable portion of the work. It was to discover and correct inequities and to improve generally the operating efficiency of the work that gave rise to a study of the system.

The existing garbage routes were established over twenty years ago and have been operated since then with a few minor changes. Because of the recent increase in population in many of the older areas of the city and the new building construction, particularly in outlying sections, the amount of work involved in the various routes has been changed considerably in the past few years.

The survey, authorized by the Department of Public Property, had as its specific assignment the task of determining the actual amount of labor involved in picking up the garbage on the 106 routes of the city so that the areas might be rearranged to divide the work more uniformly among the men. The survey was arranged so that information would be obtained concerning the garbage supplied by each city block, the total weight of garbage obtained from each route, the time required to pick up the garbage, and the distance traveled by each vehicle.

Nineteen students of the College of Engineering of Tulane University were employed to make the field survey and to assist in tabulating the material.

A building survey was made of the entire city to determine the addresses and types of buildings in each block. The number of family units in each residence was reported, and the number of rooms in hotels and boarding houses. The locations and types of business establishments were also included in this part of the collection survey.

Three checks were made of the daily garbage pick-up on each route of the city. It was determined that the heaviest work of the week occurred on Monday and Friday. No garbage is picked up on Sunday, and Thursday is referred to as "trash day," when only rubbish is supposed to be collected. Consequently, there are two days when garbage is not picked up. It was decided that one check of each route would be made on a heavy day (either Monday or Friday), and two checks made on

Refuse Collection

By HAROLD P. NATHAN
Deputy Commissioner
Department of Public Property
New Orleans, La.
and
FRANK W. MACDONALD
Associate Professor
School of Civil Engineering
Tulane University, New Orleans, La.

light days (Tuesday, Wednesday, and Saturday).

The checks of the garbage pick-up were accomplished by having one of the surveyors accompany the truck or wagon on the route. Such data were recorded as the distance traveled, the number of trips to the disposal units, the weights of each load, and the time involved. Time lost for repairs, meals, delays at the incinerators, and other incidents was taken into consideration.

It might be worth noting in passing that New Orleans has clung to the use of mule-drawn wagons for much of its collection work. This is not through any feeling about the efficiency of these wagons but rather as a concession to the many parades, in which the mules are used to draw the floats. This survey gave the first indication of what this practice costs the city's refuse collection service.

Also included was a tabulation of the number of containers placed in front of each residence or building, the estimated weight of garbage in these containers, and whether or not the containers were of the approved type of covered and impervious can.

In order to determine the approximate weight of garbage per unit volume, weights were taken of forty-four cans of various shapes and sizes in several sections of the city. This undertaking showed that the garbage in the containers weighed 1.46 pounds per gallon. Accordingly, weights of 1.50 pounds per gallon were assumed, and tables were prepared for use by the surveyors in estimating the weights of garbage in the containers found in front of residences and other buildings.

The information obtained during the field survey regarding the buildings, types of containers, and estimated quantity of garbage per building was recorded on prepared forms and tabulated. A separate sheet was used for each block and both sides of the street were covered. The forms for each route were also arranged in the order of travel by the garbage truck or wagon used in collecting the garbage on the route.

Individual maps of each route were prepared for use by the surveyors. On these maps was indicated the point where the route started, where each load was completed, and where the day's work was completed. Whenever possible, the distance traveled by the vehicle was obtained from speedometer readings. On the trucks or wagons that did not have speedometers, the distance covered was obtained by scaling from maps of the route.

Of the 106 routes of the city, 102 are in the business and residential sections of the city. The four remaining routes consist of two housing projects and two market collections, which are considered to be special routes. Of the 102 routes fifty-one were covered by wagons and fifty-one by trucks.

The following are the averages for the two light days of the fifty-one wagon routes and the fifty-one truck routes of the city:

	Weight of Garbage (1,000 Lbs.)	Actual Time Worked (Hrs.-Min.)
Wagons	7.1	5-45
Trucks	8.4	4-53

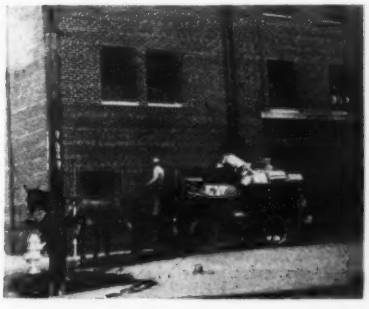
Notice the inefficiency of the wagon collections. Not only do they collect less refuse but they have to work longer to do the job.

These averages provide the best comparison for the work involved on the various routes of the city, and these figures were used in determining the length of the routes.

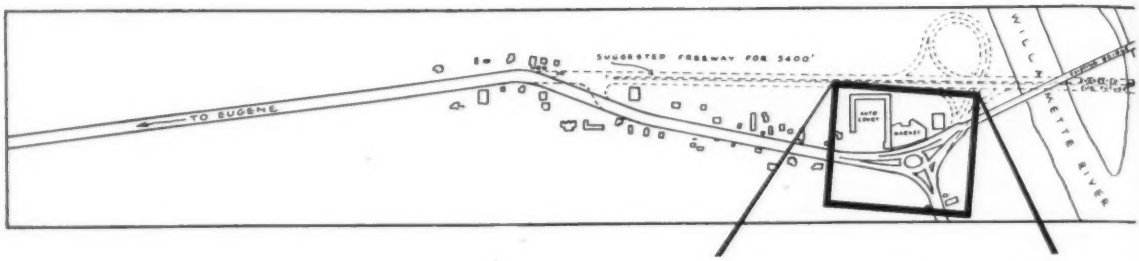
It must also be borne in mind, in analyzing the results of a survey of this type, that wide variations may also exist in the ages and abilities of the workers. These factors would not influence the distance traveled or the amount of garbage collected on the routes, but it would have considerable bearing on the time consumed in collecting the garbage.

The results of the survey indicated the following:

1. That sixteen of the routes were above the city average in both time worked and quantity of garbage collected, and twenty-eight were below.
2. That the garbage from approximately 71,465 containers was collected daily. Of this number, 51.60% were considered to be of the unapproved type.
3. That a regulation should be adopted requiring garbage to be wrapped and stored separately from the rubbish.
4. That separate collection days should be instituted for picking up garbage and rubbish.



News Orleans uses a wide variety of refuse collection vehicles, from the covered load packer (top) to the open bodied truck (center) and the inefficient mule-drawn wagons (bottom).



Twin Capitals of Lumber Empire

Eugene and Springfield, Ore., situated in the heart of the lumber empire, are seeking to solve their problems through intercity cooperation, with the help of the Central Lane County Planning Commission

By R. L. HUTCHISON

STRETCHING 120 miles between the 10,000-foot summits of the Cascades and the Pacific Ocean, Oregon's Lane County for three years has led all counties of the nation in lumber production. With nearby Douglas County it boasts a reserve of more than 100 billion board feet awaiting the axe.

In the heart of this lumber empire are the long-established university city of Eugene and its up-and-coming neighbor, Springfield, three miles east. Since 1940 the population of the county, with its 4,594 square miles of forest and farm land, has increased from 69,000 to 80,000. The Eugene-Springfield area felt the chief impact of this forced growth.

Eugene's Problems

Eugene, aside from the usual inability to solve the housing problem, has taken the boom in its stride. The Eugene Water Board—which operates three generating plants and is the southern terminus of the Bonneville system—has in the past supplied all demands, although there is trouble ahead for the whole Northwest with current demand approximating capacity output. Mountain States Power Company, supplier to Springfield and the other valley communities except Eugene, has contracted for the output of the small Leaburg hydro plant of the Eugene Water Board to make up the deficiency—subject to instant revocation, however, should Eugene demands make it necessary. The same company is negotiating for a share of Eugene's water supply.

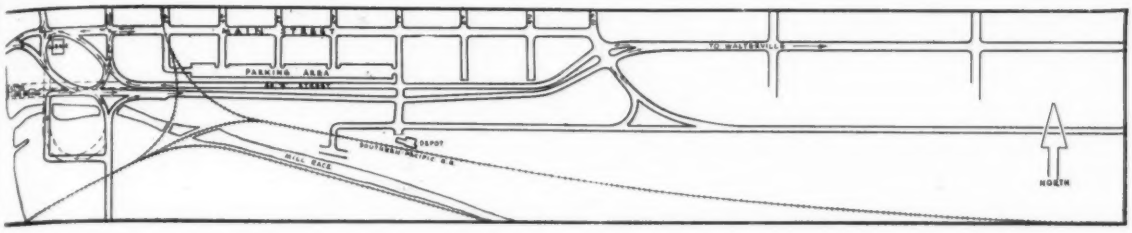
The "Y" shown in boxed section of strip map and in small photograph has been completely recently. The broken lines indicated proposed reroutings. Below is typical lumber mill that gives employment to 600 springfield families.

Growth of the Eugene business district has been orderly, with new firms branching out on both sides of centrally placed Willamette Street. Residential developments fan out from main highways, with two semi-exclusive suburbs south of the city.

Springfield's Problems

The picture is different in Springfield, with jerry-built cottages being built in some areas and the business houses stringing along Main Street. In 1935 Springfield was a village, ranking thirty-fifth among incorporated places in sparsely settled Oregon. Today it is sixth and still growing, with an estimated 8,000 residents and 4,000 more clinging to the outskirts. Eugene is about four times larger.

There is every likelihood that Springfield and Eugene will grow together in the area north of the Willamette River.



Seek Joint Solution to Problems

What will happen when the fierce civic independence of little Springfield encounters the possibility of absorption by its bigger neighbor is a matter of interesting conjecture.

However, they now cooperate in many ways. Most hopeful sign is their mutual support of the Central Lane County Planning Commission, financed through the two cities, the two school districts and the Eugene Water Board. With its alert, aggressive young director in Engineer Howard W. Buford, the commission is using its $14,000 annual budget to explore these phases of intercity cooperation:

1. *Flood Control.* The rampaging Willamette River, which loops around the west side of Springfield to skirt Eugene on the north, did $9,000,000 worth of damage in Christmas Week of 1945. In cooperation with army engineers, the commission is pressing for a series of flood-control dams.

2. *Traffic Simplification.* Through the two cities roll huge diesel-powered trailer-trucks in a 24-hour stream. Forest giants, chained by threes on long trailer beds and roaring along the highways toward the mills, are an awesome sight to the unintiated. Eugene uses one-way streets to handle the flow and considers them barren business thoroughfares.

The commission has recommended that Springfield obtain from the Southern Pacific Railroad land alongside the roadbed, a block south of Main Street, for a by-pass highway. Main Street is now clogged with every manner of vehicle, to the detriment of business.

In the long-range planning picture are new routes which will take the trucks completely around both Springfield and Eugene. Will the merchants object? Not in Engineer Buford's opinion: "They know now that business can be choked to death with traffic as well as starved for lack of it."

3. *City Zoning.* This problem has become acute in Springfield, which has allowed industrial and commercial users to acquire land the length of Main Street, driving a wedge between two residential areas. It is planned to work toward a concentration of business by pulling in some outlying stores now strung out along twenty blocks of one "main stem."

A complicating factor is the absence of adequate statutory control over planning. State law permits a municipality to approve or reject subdivision plats within six miles of the city limits, but the subdivider can and often does evade restrictions by selling the land piecemeal and permitting each owner to do as he sees fit.

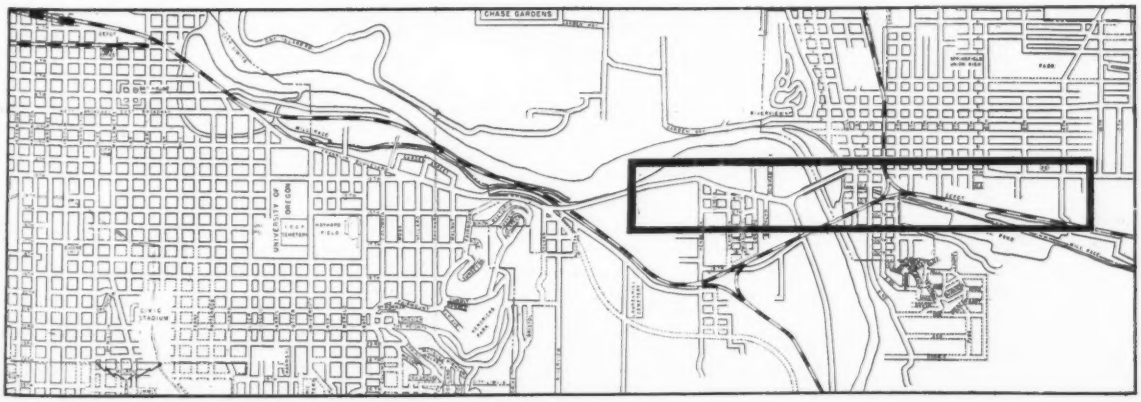
4. *Uniform Street Markings.* Well aware that Springfield, with a two-hundred-member Chamber of Commerce and a strong feeling of pride in its phenomenal growth, will not accept "suburb" status, the commission seeks to start from scratch in both cities and to iron out duplications.

5. *Diversified Industry.* While the reforestation program, which restricts the annual cut of timber in Lane County to 832 million board feet, guards against exhaustion of this major industry, the planning group deplores the possibility of an analogy to King Cotton's sway in the South.

Many new industries naturally involve by-products of lumber and have the added advantage of remedying the wastefulness now evident in almost every milling operation. Other suggested sources of wealth and employment include quick-freeze plants, ceramics, plastics, linen, and the new outlets for farm produce that chemurgy provides.

More jobs mean more people to settle in the twin capitals of the lumber empire, already bursting at the seams. Civic leaders are not dismayed at the prospect. They believe that through intercommunity cooperation, they can solve the unwelcome problems that accompany a welcome community growth.

The Planning Commission has recommended a new highway a block south of Main Street in Springfield. This area is outlined on the map below. This same area is shown in detail in the map going across the top of the pages.



Some Helpful Books and Pamphlets on Community Planning and Control of Land Uses

THIS bibliography has been prepared by The American City to meet many requests for a selected list of available publications dealing primarily with community planning and land use controls. It should be of value to local officials and citizens' organizations in cities, towns, and villages which lag in these fields. With few exceptions the publications listed have appeared since 1940.

Books may be ordered through The American City (470 Fourth Ave., New York 16, N. Y.), if desired. Pamphlet orders should be placed direct.

Books

BUILDING THE FUTURE CITY—in *The Annals of the American Academy of Political and Social Science.* November 1945. 162 pp. $2.00.

CAN OUR CITIES SURVIVE?—By Jose Luis Sert. Harvard University Press, Cambridge, Mass. 1942. 259 pp. $5.00.

CITY AND REGIONAL PLANNING PAPERS—By Alfred Bettman. Harvard City Planning Studies, 13. Harvard University Press, Cambridge, Mass. 1946. 314 pp. $4.50.

CITY DEVELOPMENT: STUDIES IN DISINTEGRATION AND RENEWAL—By Lewis Mumford. Harcourt, Brace and Co., New York, N. Y. 1945. 248 pp. $2.00.

CITY PLANNING, WHY AND HOW—By Harold MacLean Lewis. Longmans, Green and Co., 55 Fifth Ave., New York, N. Y. 1939. 257 pp. $2.50.

COMMUNITAS: MEANS OF LIVELIHOOD AND WAYS OF LIFE—By Percival and Paul Goodman. The University of Chicago Press, Chciago, Ill. 1947. 160 pp. 116 Illus. $7.50.

COMMUNITY PLANNING FOR PEACETIME LIVING—Wirth, Hilgard, Quillen. Report of the 1945 Stanford Workshop on Community Leadership. Stanford University Press, Stanford University, Cal. 1946. 177 pp. $1.50.

GREENBELT CITIES—THE BRITISH CONTRIBUTION—By F. J. Osborn. Faber and Faber Limited, 24 Russell Square, London W.C. 1. 1946. 191 pp. $3.75. Available through Ryerson Press, 299 Queen's St., Toronto, Canada.

LOCAL PLANNING ADMINISTRATION—By Ladislas Segoe and collaborators. International City Managers' Association, 1313 East 60 St., Chicago 37, Ill. 1941. 699 pp. $7.50.

NEW ARCHITECTURE AND CITY PLANNING—A symposium edited by Paul Zucker. Philosophical Library, Inc., 15 East 40 St., New York, N. Y. 1944. 694 pp. $10.00.

NEW CITIES FOR OLD—By Louis Justement. McGraw-Hill Book Co., Inc., 330 West 42 St., New York, N. Y. 1946. Illus. 227 pp. $4.50.

NEW CITY PATTERNS—By S. E. Sanders and A. J. Rabuck. Reinhold Publishing Corp., 330 West 42 St., New York, N. Y. 1946. 197 pp. $8.00.

PRINCIPLES OF CITY PLANNING—By Karl Lohmann. McGraw-Hill Book Co., 330 West 42 St., New York, N. Y. 1931. 395 pp. $4.50.

THE CITY IS THE PEOPLE—By Henry S. Churchill. Reynal & Hitchcock, Inc., 8 West 40 St., New York 18, N. Y. 1945. 186 pp. $3.00.

THE CITY: ITS GROWTH, DECAY, FUTURE—By Eliel Saarinen. Reinhold Publishing Corp., 330 West 42 St., New York, N. Y. 1943. 380 pp. $3.50.

THE NEW CITY: PRINCIPLES OF PLANNING—By L. Hilberseimer, Professor of City Planning, Illinois Institute of Technology. Published by Paul Theobald, 5 North Wabash Ave., Chicago 2, Ill. 1945. 192 pp. $5.95.

THE PLANNING FUNCTION IN URBAN GOVERNMENT—By Robert A. Walker. University of Chicago Press, Chicago, Ill. 1941. 376 pp. $3.00.

THE SELF-SUPPORTING CITY—By Gilbert M. Tucker. Robert Schalkenbach Foundation, 50 E. 69 St., New York 21, N. Y. 1946. 108 pp. $1.00.

YOUR CITY TOMORROW—By Guy Greer. The Macmillan Co., 60 Fifth Ave., New York, N. Y. 1947. 210 pp. $2.50.

YOUR COMMUNITY, ITS PROVISION FOR HEALTH, EDUCATION, WELFARE—By Joanna C. Colcord. Third Edition. Russell Sage Foundation, 130 E. 22 St., New York 10, N. Y. 1947. 263 pp. $1.50.

Pamphlets

A CHECK LIST FOR THE REVIEW OF LOCAL SUBDIVISION CONTROLS—National Housing Agency, Washington 25, D. C. 1947. 43 pp. Free upon request.

ACTION FOR CITIES—Public Administration Service, 1313 East 60 St., Chicago 37, Ill. 1943. 77 pp. $1.00.

AIRPORTS: LOCATION, DESIGN, FINANCING, ZONING, AND CONTROL—American Public Works Association Bulletin No. 27. 1313 East 60 St., Chicago 37, Ill. 1945. $1.00.

AIRPORT PLANNING FOR URBAN AREAS—Civil Aeronautics Administration. Government Printing Office, Washington 25, D. C. 1945. 98 pp. 20 cents. [Other references on airport planning available from Office of Aviation Information, C.A.A., Department of Commerce, Washington 25, D. C.]

A PROGRAM FOR THE USE OF TAX-ABANDONED LANDS—American Society of Planning Officials, 1313 East 60 St., Chicago 37, Ill. 1942. 38 pp. 50 cents.

AUTOMOBILE PARKING IN CENTRAL BUSINESS DISTRICTS—Technical Bulletin No. 6. Urban Land Institute, 1737 K St., N.W., Washington, D. C. July 1946. Tables. 15 pp. $2.00 to non-members.

CITIES ARE FOR PEOPLE—By Mel Scott. The Haynes Foundation, 2324 South Figueroa St., Los Angeles, Calif. 1942. 110 pp. $1.50.

COMMUNITIES FOR LIVING—By F. Stuart Chapin, Jr., in collaboration with Sam Schiller, University of Georgia Press, Athens, Ga. 1941. 56 pp. 60 cents.

COMMUNITY PLANNING FOR YOUNGER CITIZENS—New England Town Planning Association, 126 Newbury St., Boston, Mass. 1943. 32 pp. 25 cents.

COST MEASUREMENT IN URBAN REDEVELOPMENT By Miles L. Colean. National Committee on Housing, 512 Fifth Ave., New York 18, N. Y. 1945. 44 pp. $15.00.

ESSENTIALS FOR DEVELOPING COMMUNITY RECREATION—The Athletic Institute, 209 South State St., Chicago, Ill. 1946. 27 pp. 25 cents.

KNOW YOUR TOWN'S FUTURE—League of Women Voters of the United States, 726 Jackson Place, Washington 6, D. C. 1945. 34 pp. 25 cents.

LAND ASSEMBLY FOR URBAN REDEVELOPMENT—National Housing Agency, Washington 25, D. C. 1945. 39 pp. 10 cents.

LAND SUBDIVISION—American Society of Civil Engineers, 33 West 39 St., New York, N. Y. 1939. 75 pp. $1.20.

LOCAL PLANNING AND ZONING: A MANUAL OF POWERS AND PROCEDURES FOR CITIZENS AND GOVERNMENTAL OFFICIALS—Bureau of Planning, Department of Commerce, Albany, N. Y. 67 pp. 1946. [Free upon request, but primarily for residents of N. Y. State.]*

LONG-RANGE PROGRAMMING OF MUNICIPAL PUBLIC WORKS — National Resources Planning Board. Superintendent of Documents, Washington, D. C. 1941. 72 pp. 30 cents.

MISTAKES WE HAVE MADE IN COMMUNITY DEVELOPMENT—By J. C. Nichols. Technical Bulletin No. 1, Urban Land Institute, 1737 K Street, N.W., Washington 6, D. C. 1945. 8 pp. $1.00.

MISTAKES WE HAVE MADE IN DEVELOPING SHOPPING CENTERS—By J. C. Nichols. Technical Bulletin No. 4, Urban Land Institute, 1737 K Street, N.W., Washington 6, D. C. 1945. 15 pp. $1.00.

NEIGHBORHOOD DESIGN AND CONTROL: AN ANALYSIS OF THE PROBLEMS OF PLANNED SUBDIVISIONS—By Henry S. Churchill, Planning Consultant, and Roslyn Ittleson, Research Assistant, National Committee on Housing, 512 Fifth Ave., New York 18, N. Y. 40 pp. 1944. $1.00.

OUTLINE FOR A COMMUNITY INDUSTRIAL DEVELOPMENT PROGRAM — By Arthur M. Field. American Industrial Development Council, P. O. Box 141, Charleston, S. C. 1946. 76 pp. $1.50.

PLANNING NEIGHBORHOOD SHOPPING CENTERS—By Marcel Villaneuva, A. I. A., Planning Consultant, National Committee on Housing, Inc., 512 Fifth Ave., New York 18, N. Y. 1945. 35 pp. $1.00.

PLANNING FOR POSTWAR MUNICIPAL SERVICES—International City Managers' Association, 1313 East 60 St., Chicago 37, Ill. 1945. 90 pp. $2.00.

PLANNING FOR RECREATION AREAS AND FACILITIES IN TOWNS AND CITIES—Federal Security Agency, Office of Community War Services, Recreation Division. U. S. Government Printing Office, Washington, D. C. 1945. 51 pp. 20 cents.

PLANNING FOR THE SMALL AMERICAN CITY—By Russell Van Nest Black. Public Administration Service, 1313 East 60 St., Chicago 37, Ill. Revised 1944. 85 pp. $1.00.

PLANNING YOUR COMMUNITY—By C. Earl Morrow, Acting Executive Director. Regional Plan Association, Inc., 205 East 42 St., New York 17, N. Y. 1945. 42 pp. 50 cents.

REBUILDING OUR COMMUNITIES—Walter Gropius. Published by Paul Theobald, 5 North Wabash Ave., Chicago 2, Ill. 1946. 61 pp. $1.75.

SMALL TOWN MANUAL FOR COMMUNITY ACTION—Bureau of Foreign and Domestic Commerce, U. S. Department of Commerce. Superintendent of Documents, Washington, D. C. 1942. 42 pp. 5 cents.

STANDARDS FOR NEIGHBORHOOD RECREATION AREAS AND FACILITIES—National Recreation Association, 315 Fourth Ave., New York 10, N. Y. 13 pp. 15 cents.

* Planning commissions or agencies in a number of other states have published handbooks on planning procedures for their respective communities. The interested citizen should get in touch with the nearest local planning commission or write the proper state agency for further information.

SUBDIVISION CONTROL AND VETERANS HOUSING—Community Action Bulletin 7. National Housing Agency, Washington 25, D. C. 1946. 12 pp. Free upon request.

SUCCESSFUL SUBDIVISIONS—Federal Housing Administration. Superintendent of Documents, Washington, D. C 1941. 29 pp. 10 cents.

THE REALITIES OF URBAN DEVELOPMENT—By Elizabeth Wood, Executive Secretary, Chicago Housing Authority. Bulletin No. 33. American Public Works Association, 1313 East 60 St., Chicago 37, Ill. 1946. 8 pp. 25 cents.

URBAN PLANNING AND LAND POLICIES—Vol. II of the Supplementary Report of the Urbanism Committee of the National Resources Committee. Superintendent of Documents, Washington, D. C. 1939. 366 pp. $1.00.

WHY CITY PLANNING IS YOUR RESPONSIBILITY—By Oscar Stonorov and Louis Kahn. A booklet in the "Better Living Series." Revere Copper and Brass, Inc., 230 Park Ave., New York, N. Y. 1943. 14 pp. Free on request.

YOU AND YOUR NEIGHBORHOOD: A PRIMER FOR NEIGHBORHOOD PLANNING — By Oscar Stonorov and Louis I. Kahn. Revere Copper and Brass, Inc., 230 Park Ave., New York 17, N. Y. 1944. Illus. 99 pp. Free on request.

YOUR BUILDING CODE—By Miles L. Colean. National Committee on Housing, Inc., 512 Fifth Ave., New York 18, N. Y. 1946. 30 pp. 35 cents.

YOUR STAKE IN COMMUNITY PLANNING — National Committee on Housing, Inc., 512 Fifth Ave., New York 18, N. Y. 1944. Illus. 27 pp. 35 cents.

Periodicals

For the non-technical reader wishing to keep informed regarding current progress in city planning and zoning, periodicals especially recommended are:

THE AMERICAN CITY—Published monthly; $3.00 per annum. American City Magazine Corporation, 470 Fourth Ave., New York 16, N. Y.

NEWSLETTER of the American Society of Planning Officials, 1313 East 60 St., Chicago 37, Ill. $10.00 per annum, including membership and other publications.

PLANNING AND CIVIC COMMENT—Published quarterly. American Planning and Civic Association, Union Trust Bldg., Washington, D. C. $5.00 per annum, including membership and "American Planning and Civic Annual."

URBAN LAND—Published monthly. Available to members only. Urban Land Institute, 1737 K Street, N.W., Washington 6, D. C. $10.00 per annum, for individuals and libraries.

Bibliographies

Housing

No attempt has been made to include publications on housing, obviously closely related to community planning. A bibliography on housing may be obtained from the National Association of Housing Officials, 1313 East 60 St., Chicago 37, Ill.

Other Bibliographies on Planning

The following sources are suggested for more deailed planning bibliographies:

The American Society of Planning Officials, 1313 East 60 St., Chicago 37.

The Urban Land Institute, 1737 K St., NW, Washington, D. C.

Katherine McNamara, Librarian, Departments of Landscape Architecture and Regional Planning, Harvard University, Cambridge, Mass.

Subdivision Problems Discussed In Community Action Bulletin

SUBDIVISION CONTROL
Coordinates land development
Effects economy in supply of utilities and services
Discourages premature subdivisions
Prevents traffic hazards
Establishes standards of design
Requires survey and recording of plats
Supports planned community growth
STATE LEGISLATURE passes state subdivision control law.
CITY COUNCIL OR COUNTY SUPERVISORS pass a subdivision control ordinance or resolution.
PLANNING COMMISSION adopts subdivision regulations
SUBDIVISION CONTROL

TWO recent publications of the National Housing Agency are designed to be of special value to communities expecting a substantial increase in the volume of new subdivision activity this spring.

Community Action Bulletin No. 7, entitled *Subdivision Control and Veterans Housing*, has been published to bring subdivision control problems to the attention of local groups through Mayors' Emergency Housing Committees or other local organization concerned with community planning and housing problems. It seeks to encourage local citizen groups to press for and support action to evaluate and improve local subdivision control.

The bulletin explains that the "arrangement of houses on land, the utilities and community facilities which serve the houses, and the physical relationship of one hous to another are as important to the physical attractiveness and liveability as the structure of the house itself."

With some communities planning to add more than 30% to their store of dwellings during the next two years, it is important, says the bulletin, that the new housing be in orderly, planned neighborhoods integrated with the central community.

Another NHA publication, *A Check List for Review of Local Subdivision Control*, lists detailed subjects of subdivision control legislation, regulations, and local practices which may be used in an analysis of local controls. The check list also contains recommended practices in the design and layout of subdivisions and methods for treating specific subdivision problems normally covered by local subdivision regulations.

The appendices of both the bulletin and the check list include the titles of publications containing model laws and regulations and background material on land subdivision. Copies are available on application to the National Housing Agency, Washington, D. C.

Mattoon, Ill.

Unifies Water Supply

The process of abandoning a dual water system included building prestressed concrete covers for the storage reservoirs. The authors tell why the system was abandoned and how the covers were built.

A WATER system as curious as a two-headed calf is being renovated at Mattoon, Ill. For the past forty years the community has been in the peculiar position of maintaining two separate water supply systems; one of clear water for domestic and fire-fighting purposes, and one of raw water for railroad and industrial use. To add to the distinction, a private company furnished the clear well water until 1936, and the city furnished the raw water.

Lest some impulsive reader be tempted to try such an arrangement, let it be stated here and now that the city has been laying plans for eliminating this anachronism for at least twenty years, and the people of Mattoon feel no loss of civic pride for having exchanged this hydra-headed municipal freak for a more normal service.

History of Dual System

The system had its beginning in 1885, when a private group began serving the city with well water, which met requirements to a certain extent. It was wet, and, if administered in sufficient quantities, would put out a fire. Other than that, it had little in its favor. It was hard, contained about two ppm of iron, and had a disagreeable odor and taste. After standing a moment or two in a bathtub, it looked as though it had been taken from a rut in the street. People unwillingly used it for drinking and washing.

Until 1907 this metallized, mineralized solution was furnished as water to both domestic and industrial consumers. In 1907, however, the New York Central Railroad registered a protest, and threatened to move its large Illinois Division shops, employing several hundred people, from Mattoon. To prevent this and to help encourage other industries to come here, a group of local businessmen formed a company to develop a surface water supply for industrial use only. They built a lake about six miles from the city on the upper portion of the Little Wabash River, and constructed the necessary pumping station and supply and distribution mains.

Part of this separate raw water system included a storage reservoir at the edge of the city, to be drawn upon for raw water users when the lake station pumps or supply main might be out of service. This storage tank was 95 feet in internal diameter, 20 feet deep at the wall, and 30 feet deep at the center, having a maximum capacity of about 1.3 million gallons. The tank was roughly constructed of plain concrete.

Bootleg Water

With the advent of the surface supply, which was somewhat softer, and, when not laden with silt, preferable to the well supply for many purposes, there developed a domestic demand for it. Understandably enough, the private utility objected, and instituted court orders restraining the city from making domestic connections. Like most prohibitions, this resulted in "bootleg water," and it was not unusual to see connections made by lantern light in the dead of night. Ultimately there were about 500 domestic users of the raw surface supply, many of whom had service from the well supply also.

This, of course, led to the practice of using the two supplies interchangeably, drawing on the well supply only when the surface water was muddy, and naturally very frequently both valves would be left open, with a flow of one system to another.

The public, however, seemed somewhat proud of this schizo-supply, even to the point of one mayor's boasting that Mattoon had not one but two water supplies. Needless to say, industries and other potential settlers shunned Mattoon. Although favorably situated, the city had not enjoyed normal growth until steps were taken to eliminate the condition.

In 1936, when the city finally purchased the clear water system with all property at a total cost of $485,000, the water commissioners laid plans and subsequently built a treatment plant large enough to treat the water from both systems. Although the treatment plant was placed in service in 1936, plans to unify the two systems were dropped because of local fear that the surface water would not be fit to use even when treated. Consequently the Water Commission, because of an inadequate supply, adopted the policy of producing this change by gradual and unsuspected steps. The city continued to supply well water as long as the wells could furnish it, and as the demand increased they added lake water to the treatment plant in increasing proportions. Opposition to the use of lake water diminished to the point where, by 1940, the water department again was able to consider outright unification. The war intervened, however, and caused another postponement.

Engineers' Recommendations

In 1945, with the war's end in sight, the Board of Water Commissioners authorized Wilson and Anderson, Consulting Engineers, Champaign, Ill., to make a study and report on unification of the two systems.

The engineers found that the most essential items necessary to unification were the creation of both ground-level and elevated water storage units meeting public health and Fire Underwriters' requirements. As mentioned previously, the city had a 1.3-million-gallon, open, raw water storage reservoir and a 1.0-million-gallon, open, well water storage tank. The engineers recommended the construction of a concrete dome cover on each, with the radial thrust of the dome countered by a heavy

By JOHN A. GOETZ
Superintendent, Water Department
Mattoon, Ill.
and
R. D. WILSON
Wilson and Anderson
Consulting Engineers
Champaign, Ill.

base ring with prestressed ring reinforcement. This system of construction had been used during the war years because of its economy both of steel and concrete, as well as for its ability to produce a concrete that was relatively free of cracks and other defects. The engineers' design called for a dome cover not more than 3 inches thick. Their estimates placed the cost of the two covers at approximately $26,000.

Some members of the water board, however, felt a preference for flat slab covers supported on columns; principally because this construction could be more readily and economically covered with protective earth, and also because it had been in use for many more years than prestressed dome covers, and they felt that its permanence was perhaps more completely assured. The board, therefore, instructed the engineers to design the covers on both systems and to secure competitive bids as a basis for final selection of the type of covers. After thorough study, the engineers chose "three-way" flat slab construction supported on a center column and six additional columns on a hexagonal pattern between the center column and the outer wall of each tank. The final design of each cover on this basis required an 11½-inch slab with a 5-inch drop panel at each column for the 95-foot diameter tank. The columns themselves were each 24 inches in diameter with a 6-foot spread column cap and circular footing of 10 feet and 11 feet for each tank. Virtually none of the slab load could be transferred to the walls, since the walls were already built and no continuity could be developed at that point.

Low Bid on Concrete Dome

Proposals were submitted on October 2, 1945. The Cement Gun Co. was the low bidder, with a total price of $24,665 for a 3-inch-thick Gunite dome, compared with $36,126 for slab and column construction, neither price including earth cover. Addition of 2 feet of earth cover over the flat slab roof of both tanks was priced at $5,200, which would have made a total cost of $41,326 for the flat slabs with protection.

The bids did not disclose complete comparison of cost, since it was assumed that no cover would be provided for the dome if it were selected. However, if earth covers were to be added to the Gunite domes, it was the engineers' opinion that not less than a 4-inch dome thickness would be advisable. The low bid, again by the Cement Gun Co., for domes of such thickness and design as to withstand earth cover, was $29,669 for both tanks, still low enough to justify the contract.

Another important factor considered in the choice of the dome was the estimated construction time. For the flat slab and column covers, the contractor estimated that each tank would be out of service for seventy-five days, and total construction time on each would be 120 days. The estimated time out of service for the larger tank, to construct Gunite dome covers, was thirty-five days, and for the smaller tank, thirty days. This considerable difference was highly important to the city, as its reserve water supply was seriously reduced by the loss of the tank.

Tests Made Daily

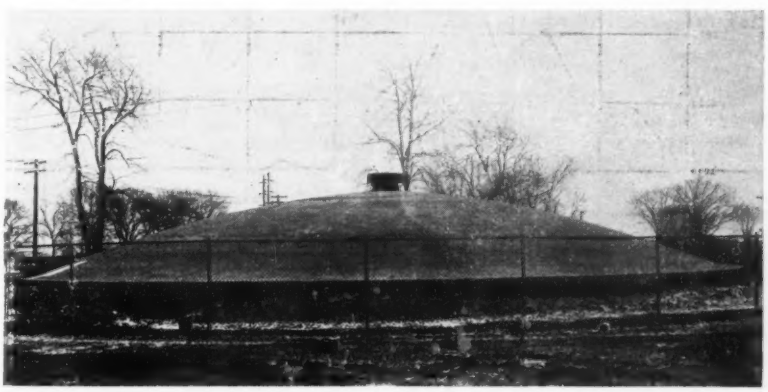
Gunite concrete was used throughout the dome shell and base ring construction, and it appears that very good, dense concrete was obtained. Two test cylinders were made each day while shooting of the concrete progressed, by blowing the mix into a cylindrical form made of ½-inch mesh hardware screen. This method allows the larger particles of aggregate to fly from the deposited mass much as it occurs during shooting on an open form. The test cylinders showed an average strength of more than 5,000 psi in approximately seven days. The maximum range of test cylinder strength was between 2,400 and 7,200 psi, with only three samples out of fourteen testing at less than 4,000 psi and obviously not fairly representative of the mass of concrete deposited.

Immediately before removal of the forms the base ring bars were tightened with turnbuckles by the use of weighted lever arms gaged to provide the predetermined stress required by the design. To check the prestress values, the engineers made extensometer tests on one bar in each ring at three points around the circumference of each tank, before and after prestressing. An experimental bar was also gaged before and after application of stress on the tested rod to determine what correction, if any, was necessary due to change in temperature during stressing. Actually it appeared that overstress of about 10% was accomplished, but this was considered advisable because of an anticipated plastic flow of the masonry.

A few noticeable tangential cracks and one or two radial cracks have been observed on the dome of the larger tank in the upper half of its area. Only short, isolated tangential cracks have as yet been observed on the smaller tank cover at any point, and no cracks are evident on the base ring or lower third of the dome of either tank. The cracks on the larger dome apparently developed because of the change in atmospheric temperature, since this dome was poured in the very hottest weather of summer. The cracks apparently have no structural significance, and can easily be sealed.

With the two reservoirs now properly covered and in use as clear wells, together with two older covered tanks of approximately 100,000 gallons each, Mattoon has clear water storage equal to one day's average water demand. Upon completion of a new 500,000-gallon elevated steel tank in about a year, total storage of clear water will be equal to a maximum day's demand at the present rate of usage.

In Mattoon, any novelty of having a dual supply has completely worn off, and the city looks forward to full achievement of an improvement program during this year which will allow unification of pumping and treatment.



One phase of Mattoon's program of unifying its water system included covering its open reservoirs with thin-section pre-stressed concrete.

Three Billion Dollars in Public Works Plans Completed

SUBSTANTIAL progress has been made toward achieving a reserve of fully-planned state and local public works, ready to be put into construction when economic conditions warrant, according to a Federal Works Agency survey released on February 10. It is being slowly increased through the concerted efforts of state and local governments and the federal government. However, continued planning will be needed, the report concludes, to bring the shelf of public works up to an adequate volume, and then to maintain it in adequate volume as a continuing reserve.

Through December 31, 1946, under the advance planning program of FWA's Bureau of Community Facilities, a total of $46,606,763 had been advanced to 3,231 different public bodies, ranging from state governments and major cities to counties, townships, independent school districts, and other public agencies. These public bodies, located in every state, the District of Columbia, Alaska, and Hawaii, are using the advances to finance the preparation of drawings and specifications for local public works with an estimated construction cost totaling $1,529,211,000 and an estimated total cost of $1,832,913,000.

The results of state and local advance planning of public works, with and without federal assistance, are shown in the third semi-annual report of George H. Field, Commissioner of the Bureau of Community Facilities.

Plans Without Federal Aid

Plan preparations completed without federal financial assistance through December 31, 1946, cover proposed state and local public works with estimated construction costs of $1,323,498,000 and estimated total costs of $1,581,260,000. In addition, without federal financial assistance, state and local governments have plans in the design stage for public works with an estimated construction cost of $4,124,009,000, but, the report says, the rate of progress in bringing these plan preparations from the design stage to completion has been slow.

The report also gives data from the Public Roads Administration, FWA, which show that in the forty-eight states, the District of Columbia, Hawaii, and Puerto Rico, as of December 31, 1946, plan preparations had been completed for federal-aid and state highway projects with an estimated construction cost of $804,318,000, and plans were in the design stage for projects with an estimated construction cost of $1,926,521,000.

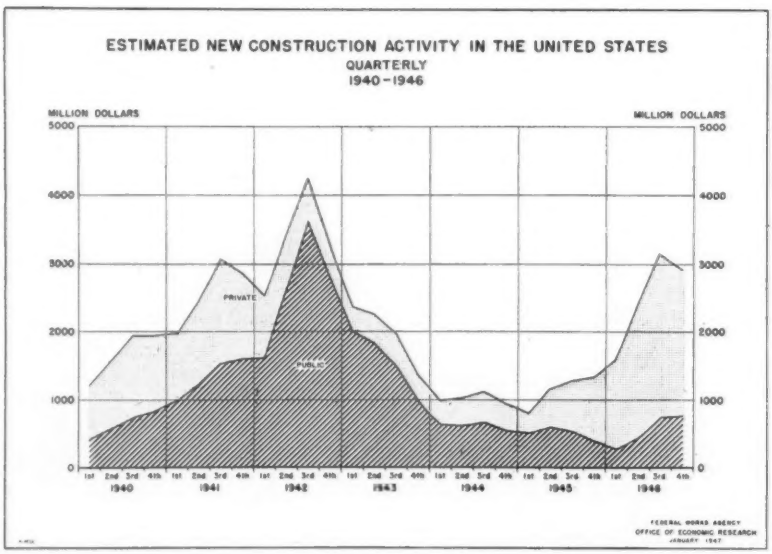
Sewer, Water, and Sanitation Facilities

Remarking that "there is no occasion to turn to works of doubtful usefulness in building up a reserve," the report notes that sewer, water and sanitation facilities and schools and other educational facilities are leading the types of public works for which federal advances have been approved. The same types are among the state and local public works thus far planned without federal assistance.

"Yet," says the report, "all the public works of these types thus planned, or being planned, constitute only a fraction of those for which an urgent need exists. The same is unmistakably true at the present time for community facilities of all types — the recognized need vastly exceeds the volume of plan preparations. There is no thought of encouraging the planning of any but the most useful and needed public construction."

Extend Authorization

In Commissioner Field's letter submitting the report to General Philip B. Fleming, FWA Administrator, he points out that the War Mobilization and Reconversion Act of 1944 is due to end on June 30, 1947. He adds, "In view of the continued need for advance planning on a large scale, serious consideration should be given to the question of extending the authorization of the advance planning program beyond that date."



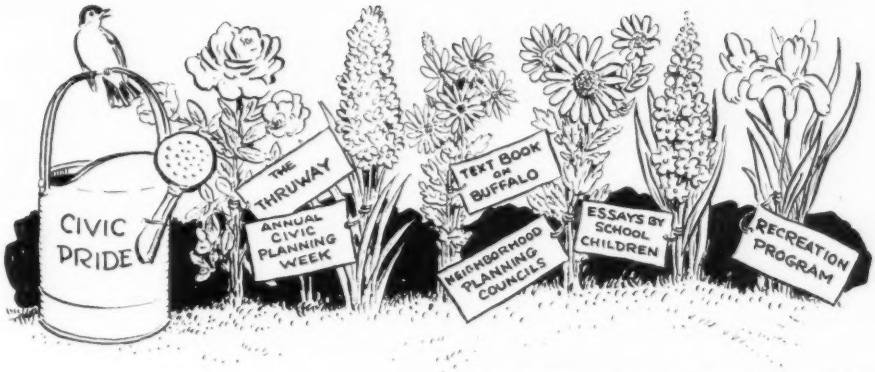
This chart shows the relationship between public and private construction for the past seven years. The report of the Federal Works Agency's Bureau of Community Facilities declares that an adequate reserve of state and local public works must be maintained. In addition, it must be sufficient in volume to help stabilize the construction industry as private construction needs diminish.

Materials for Veterans' Housing

A NEW regulation, HEPR 7, has been issued by the Office of the Housing Expediter, which covers the sale and removal of surplus temporary structures and aboveground and subsurface utilities at military installations and on other land owned by or leased to the U. S. government.

The War Assets Administration is cooperating with the Office of the Housing Expediter in placing on sale as soon as possible all such surplus materials so that they can be channeled into the Veterans Emergency Housing Program.

The regulation does not affect the priority rights established for various groups by the Surplus Property Act of 1944, as amended. However, it does establish a priority group called "VEHP self-certifiers," which comes after the Surplus Property Act priority groups and just ahead of the general public.



COURTESY OF THE BUFFALO CITY PLANNING ASSOCIATION

How Does Our Garden Grow?

Buffalo Prepares for Third Annual Civic Planning Week

THE Buffalo City Planning Association announces that it will sponsor its third annual "Civic Planning Week," March 16-22, inclusive.

Chief of the Week's activities is the writing of essays on a phase of city planning by all the school students from the seventh grade through high school, in the public, private and parochial schools of Buffalo. This year's subject is to be "How We Can Improve Our Neighborhood," and has been chosen to tie in with the Association's latest project. This new project is the formation of Neighborhood Planning Councils throughout the city, in order to clean up and beautify vacant property, backyards, and dooryards, and, as a long-view objective, to arouse neighborhood pride in order to prevent deterioration and blight.

In deference to the wishes of the school officials, there will be no prizes for the best essays, but certificates will be awarded to the essays selected as outstanding by the teachers.

The civic and business organizations will devote a portion of their regular meetings during "Civic Planning Week" to the subject of city planning, and the association has a corps of speakers ready to carry the message of planning education to these groups.

High point of the week will be "Civic Night" on March 19, when a debate on "Public versus Private Housing" will be held in the Hotel Statler. The speakers will be Herman T. Stichman, Commissioner of Housing for the State of New York, and Hubert U. Nelson, Executive Vice-president of the National Association of Real Estate Boards. The debate will be followed by a discussion.

In the previous two Civic Planning Weeks, the churches, newspapers, and libraries of the city cooperated to the fullest, and it is expected that the precedent thus established will hold this year.

"Thought Starters"

The Buffalo City Planning Association, as in other years, will publish several special pamphlets and booklets for the week. One will be a "thought-starter," to be distributed to the approximately 60,000 students who will write the essays. Another will be a special membership appeal, which will describe the association's accomplishments in the past and its goals for the future.

The special booklet of the week, which will be distributed on Civic Night, will be titled *You and Your Neighborhood*, and will be devoted to the Neighborhood Planning Councils project.

Members of the committee in charge are R. J. Schutz, Chairman; Mrs. Alice E. Glazier, Mr. and Mrs. Thomas A. Boris, Horace Carpenter, Jr., Miss Henrietta M. Langner, Miss Sara Kerr, Harry I. Good, Rev. Frank Grebe, Rt. Rev. Monsignor Sylvester Holbel, Robert Parke, and Milton C. Guggenheimer, president of the Association.

For an account of Buffalo's first Civic Planning Week, see THE AMERICAN CITY for April 1945, pages 73-74.

Method Described for Forming Community Councils

DESIGNED to serve as a guide to community leaders in developing increased citizen participation in local planning activity, a 1946 booklet of the Minnesota Postwar Council, *A Program for Community Action*, outlines specific methods for forming community planning councils, to be composed of representatives of each civic, governmental, and social organization in the community. The primary purpose of these advisory councils is to coordinate planning activities and to approach community problems from a broad point of view, working without bias for the common good of the total community.

A community planning council, as visualized in the report, would not encroach on the functions of any one existing group in the community, but rather would help them all to carry out their objectives more effectively. The Minnesota Postwar Council is charged by law with the responsibility for stimulating and coordinating local planning activity in that state and offers staff information and assistance to groups interested in establishing local community planning councils. The method described is one which can readily be adapted by other communities.

Several subjects are suggested and discussed for possible studies and reports by the planning councils, including the following: over-all economic analysis and progress; physical characteristics of the community; housing; education; fire and police protection; airport and aviation facilities; traffic, transportation and parking; finance planning, including taxation; agriculture, and veterans assistance.

An appendix contains a suggested constitution for a community planning council. Copies of the booklet may be obtained by addressing the office of the Minnesota Postwar Council, 202 State Capital, St. Paul 1, Minn.

Memphis Retains Wartime Practices

A WAR EMERGENCY measure, calling for unreinforced concrete slab with an expansion joint every 90 feet and a dummy contraction joint at each intermediate 30-foot point, has proved to yield such reliable, trouble-free service that Commissioner of Public Works Oscar P. Williams has decided to use it as a standard practice.

Two projects completed last summer by the Department of Public Works illustrate how this is being used. One covers the Cummings Street improvement; the other, street construction serving Kennedy Hospital. All consist of an 8-inch plain concrete slab with a joint every 30 feet and every third joint an expansion joint. The slabs are poured in three sections, the two outer lanes being 15 feet wide and the inner lane 20 feet. A 2½-foot curb and gutter flanks the three sections, making an overall roadway width of 54 feet between curb faces. The curb and gutter are 6 inches thick and have an 8-inch curb height. The concrete used is designed on a 1:2:3 mix basis, with a water-cement ratio that will produce a strength of 4,000 psi.

A Flexcell joint with a Carylastic joint sealer is being used—an experiment by which the city hopes to produce a non-extruding type of expansion joint that will insure a smooth riding surface. In the past, wood expansion joints of heart pine with vertical grain have been used. These joints have given excellent service, both in regard to riding surface and in providing adequate expansion and contraction space. Some have been in service since 1909.

The slabs are cured by being covered with Sisalkraft paper for 36 hours.

In connection with the paving program a pair of drainage structures are being built. One consists of a bridge 90 feet long and 57 feet in width, comprised essentially of a triple-box culvert, each box measuring 19 feet in width. This bridge constitutes an important phase in street development in that area. An interesting aspect of this construction is the multiple use of the forms for each vertical wall and the method of keying them together. The contractor built the form out of plywood sections, each 10 feet wide and surrounded with a 2-by-4-inch framework. Adjacent forms were notched to allow them to fit closely and hold their positions rigidly with a minimum opportunity for slipping.

Floors of the triple-box culvert were designed with a center drainage channel to accommodate the dry-weather flow. This channel is shaped roughly in the form of a circular segment and is 6 inches deep and 3 feet wide.

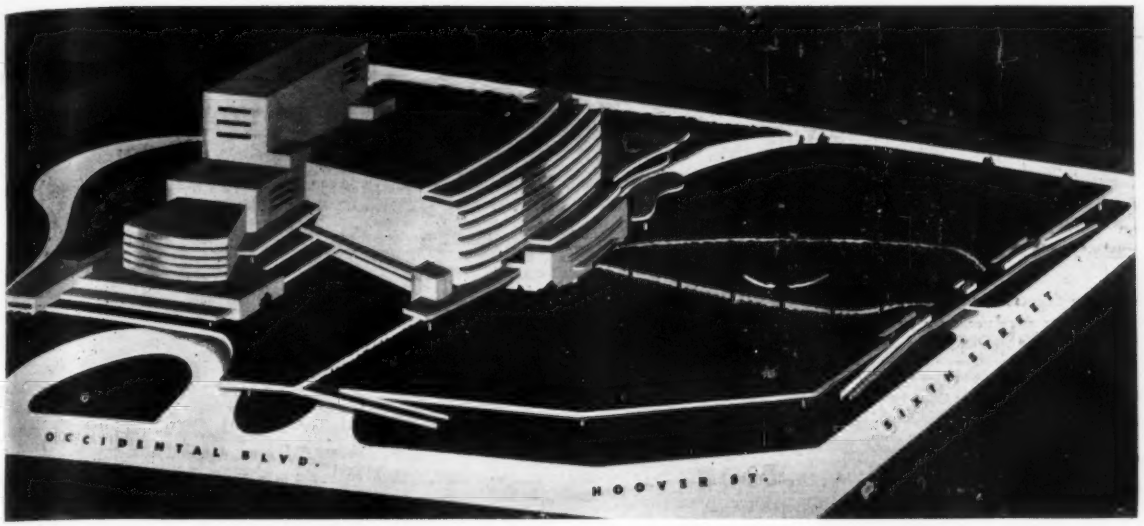
The second drainage improvement is a 10-by-10-foot conduit built to care for storm flow in a residential area. The construction was interesting in that the contractor used a small LeTourneau for all excavation. The machine's width was exactly right for shaping out the excavation without the necessity for any further hand trimming.

1. One 15-foot lane has been poured in this operation of the Memphis street paving program. 2. This shows a close-up of a non-extruding expansion joint before being sealed. 3. A 90-foot triple-barrel culvert forms an important part of last year's street improvement. Construction of this culvert was arranged in such a way that the forms could be reused on each wall. 4. Forms were constructed with this notched arrangement to insure rigidity between each panel. 5. Construction proceeds on a storm sewer improvement.

Bridge Design Method Saves Steel

AS MUCH as 30% in the weight of steel beams in concrete bridge floors can be saved by using a design based on "composite construction." C. P. Siess, associate professor of theoretical and applied mechanics, University of Illinois, explained this before the American Society of Civil Engineers' annual meeting held recently in New York.

Composite construction utilizes a design that provides for rigid connection between the concrete slab which forms the roadway of the bridge and the steel I-beams on which it rests. The new design enables bridge builders to obtain greater stiffness in their structures. They accomplish this by welding steel clips to the tops of the beams and imbedding them into the concrete as it is poured. The stiffness of the composite beam will be from two to three times as great as the stiffness of the original non-composite beam.



A model representing a preliminary conception of the Los Angeles opera house.

Los Angeles Selects Sites for New Buildings

SITES have been chosen for a Los Angeles war memorial auditorium and an opera house, two multi-million-dollar projects designed to make the city an outstanding cultural center as well as to serve a broad range of other purposes. The projects are being developed by Greater Los Angeles Plans, Inc., a non-profit combination of business and civic leaders which intends to keep control of the institutions but plow back revenues into further developments along the same line.

A $2,000,000 fund for the completion of real estate purchases and the design and preparation of construction plans is being solicited. No definite decision has been reached as to the financing of the actual construction work, but it is not expected that any governmental funds will be sought.

The opera house, seating up to 6,000 persons, is envisioned as the "second home" of the Metropolitan Opera Company, which is projecting a series of Western engagements, starting in 1948.

The auditorium will have a maximum seating capacity of 30,000 and will provide an arena large enough for the presentation of indoor spectacles and major athletic events. The site was chosen because of its accessibility to present and planned parkways and freeways, and its convenience to hotels, present and contemplated.

Of particular importance is its proximity to the business center so that day to day revenues could be obtained from its several-thousand car park.

This birds-eye view shows how the proposed war memorial auditorium in downtown Los Angeles will look when completed. Under the plan two main crosstown arteries will be tunneled under the 23-acre auditorium site.

Detroit's

Mechanically Stoked Incinerators

. . . reduce stoking labor requirements to 47% of those required in manually stoked incinerators, producing at the same time a more completely consumed residue.

DETROIT is a mechanically minded town. The assembly line is its symbol, and the employment of men at good wages, working at machines with high production rates and correspondingly lower production costs, is its aim.

One should not be surprised to see that Detroit's garbage and refuse collection system reflects this type of thinking. The city uses a fleet of Detroit-built Gar Wood closed garbage trucks for collection and is fast converting all its incinerators to mechanical stoking.

New Incinerator Results

Let us see what this mechanized incinerator process does for Detroit. Unit costs are misleading, being constantly thrown out of balance by wage scale variations, vagaries in accounting and a dozen other intangibles that do not show on the balance sheet. Unit production on a man-hour basis is much more useful and can be applied directly to virtually any city to obtain a "localized" answer. The man-hour basis is subject only to variations in the work that the particular man selected will accomplish during the hours he is asked to work. Thus man-hour figures and other operating data from Detroit's two new mechanically stoked incinerators should prove significant.

In analyzing the new Monohearth units, the city has been able to decrease stoking labor to 0.272 man-hours per ton of refuse, as compared with 0.576 man-hours per ton in the older basket-type incinerators at the 24th Street plant, and 0.412 man-hours per ton at the central plant. Roughly 1½% of the residue remaining was unconsumed material, thus showing how thorough the reduction was.

Since in regular stoker-fired steam power-plant operation the loss due to unconsumed fuel passing through the grates varies from 0.5-5.0% of the fuel value, it is apparent that the new installations do a good job in this respect. The unconsumed residue is estimated by subjecting a sample to a temperature of 1600°F for four hours.

The total ash residue from the material incinerated on the test was 16.4% at the central plant and 14.05% at the 24th Street station.

On test, the power consumed amounted to 2.75 kw-hr per ton of refuse at the central plant and 2.16 kw-hr per ton at the 24th Street plant. The power requirements for the blower furnishing air to the cone in the new units are 9.33 bhp. This contrasts to 18 bhp required by the stationary grates. A ¼-hp motor drives the cone and stoking arms in the new incinerators.

Before 1938, Detroit disposed of garbage by the reduction process in a plant located about 20 miles outside the city limits. This garbage collection and disposal service was costly, aggregating roughly between $9.00 and $10.00 per ton. The rubbish, disposed of on open dumps, cost the city approximately 80 cents per cubic yard.

Neither the costs nor the methods of disposal were particularly satisfactory, either to the city or to certain civic bodies interested in city affairs. In 1928, the Detroit Bureau of Governmental Research submitted a report to the Commissioner of Public Works, making certain recommendations for garbage and refuse disposal. This was followed by the Bureau's report to the Mayor in 1930. In 1932, the city engineer's staff collaborated with members of the Bureau in preparing a report to the Commissioner of Public Works on the disposal of municipal wastes. In the preparation of this report, the committee visited almost every important incinerator and reduction plant operating in the United States and Canada, obtaining pertinent data on design and operating characteristics from each.

Fixed-Grate Incinerators

On the basis of these studies, Detroit constructed and placed in operation four incinerators having a total capacity of 1,400 tons of mixed refuse per twenty-four hours. These plants were all of the high-temperature, mutual-assistance type, employing DeCarie basket-grate furnaces. The plants were equipped with bins, and furnaces were charged by 3½-ton P & H traveling cranes equipped with 2-cubic-yard clamshell buckets. Each plant was provided with two chimneys, 150 or more feet high, each chimney being capable of operating the plant at capacity.

Trucks brought the refuse into the plant at ground level and dumped it into a storage bin. The crane elevated this to hoppers on the charging floor, where material was discharged by gravity through an air-operated gate into the basket grate of the furnace. At this point, a set of muscular workmen took over and stoked down the basket grate onto the burning grate by means of stoking bars. Periodically, they dumped the residue from the burning grates into hoppers located in the ash tunnel below. These hoppers discharged by gravity into waiting trucks that transferred the residue to a suitable disposal point.

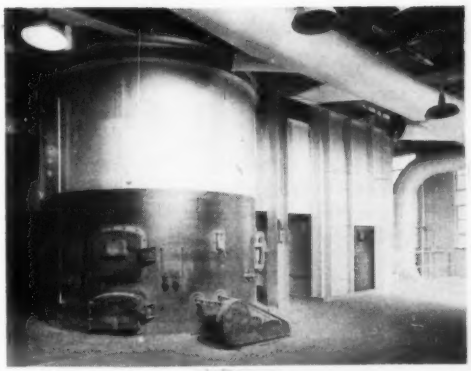
As indicated, the work was hard. Stoking bars were heavy and awkward. To do the work meant opening the stoking doors and being subjected to the intense heat of the incinerator cells. Nevertheless, the incinerators worked efficiently and from a functional standpoint solved our refuse disposal problems.

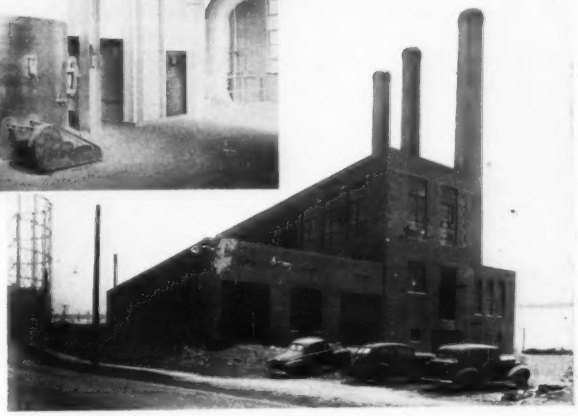
In the fall of 1941, at an American Public Works Congress annual meeting, there was an exhibit showing a cutaway model of a mechanically stoked incinerator. As a result, the writer, then on the city staff, received instructions from the city engineer to inspect and report on an experimental plant employing mechanical stoking which was in operation in Port Jervis, N. Y. The operating results were convincing enough, both on the basis of labor required and type of residue produced, to encourage the city to convert one of the basket-type incinerators to mechanical stoking and keep it in experimental operation until early in 1944, when it was tested for compliance with its guarantee. On its test, the unit incinerated a mixture containing 62½% moisture and exceeded its guarantee by 31%.

New Incinerators Built

This experiment was encouraging and gave the city guidance when other problems of refuse disposal arose, as they promptly did. During the war, Detroit's population increased rapidly, for

By ROBERT H. STELLWAGEN
Consulting Engineer
Detroit, Mich.





Left: One of Detroit's two new incinerators. Below: The incinerator burning unit with its combustion chamber.

very obvious reasons. Incinerator capacity that would have been ample under normal conditions became badly overtaxed, making necessary the installation of additional furnace capacity. The city laid plans for the construction of two more incinerators.

Plans and specifications were prepared by the City Engineer's office, bids were solicited, and a contract awarded to the Nichols Engineering and Research Corp., N. Y., who were the low bidders, for the construction of new incineration capacity rated at 350 tons in twenty-four hours. These took the form of additions to two of the present incinerators and followed the general architectural design of the existing plants. The additions were identical in size, each being designed to incinerate 175 tons of mixed refuse in twenty-four hours. The contractor completed their construction early last year.

Incineration Details

Since the additions are identical, it will be sufficient to describe only one of the units, and we will select the addition at the central plant. Two 87.5-ton Monohearth mechanically stoked units were installed, both discharging the products of combustion through a common combustion chamber, an expansion chamber, and a stack. Two forced-draft fans are used to provide the air required for combustion. One of these fans supplies air to the revolving conically shaped hearth, and the other furnishes air to the stationary grates. The air supply may be controlled from the operating floor by means of dampers in the various ducts.

The ventilating system is arranged to draw air from the ash tunnel, the tipping floor, the charging floor, and the operating floor. All air for building ventilation is used for combustion and is completely deodorized by being passed through the furnace. A heater of novel design preheats the air required for combustion of 550°F. In this heater, exhaust gas drawn from the expansion chamber is mixed with the air supplied for combustion. Thermostatic controls are provided to prevent injury to the fans in case preheat temperatures rise unduly. The amount of exhaust gas mixed with the air supply is controlled from the operating floor by means of a cast-iron damper.

The operator can control the Monohearth and the forced draft fans by using push-buttons located conveniently on the operating floor. There is also a panel equipped with instruments of the indicator type. Pointer-type draft gages indicate air pressures beneath the grates, under the cone, and at the base of the stack. A pyrometer indicates the temperature of the preheated air, the combustion chamber, and the stack gases. On an instrument panel in the office, pyrometers of the millivolt type make separate records of the combustion chamber and stack temperatures.

The acceptance tests showed ample ability to meet the load requirements. The central plant addition, rated at 175 tons per twenty-four hours, incinerated a mixture having a combined moisture content of 51.8% at the rate of 219 tons per twenty-four hours, without the use of additional fuel. At no time during the test period did the temperature in the combustion chamber fall below 1,500°F, and an average temperature of 1600°F was maintained. The thoroughness of the reduction can be illustrated by the fact that unconsumed material in the residual ash amounted to 1.5% on a dry basis.

The 24th Street unit, with the same rating, incinerated a mixture having a combined content of 51.1% at the rate of 240 tons per twenty-four hours, while maintaining an average temperature of 1,750°F in the combustion chamber. The unconsumed material remaining in the residue amounted to 1.61% on a dry basis in this case.

During both of these tests, the Bureau of Smoke Inspection and Abatement reported that emissions were well within the limits of the city ordinance.

During the acceptance test, the man-hours of stoking labor required at the central addition was 0.136 per ton incinerated, while at the 24th Street plant this figure was 0.125 man-hours per ton. In regular operation, under Detroit labor conditions, the stoking labor used on the Monohearth is 0.272 man-hours per ton, as compared to 0.576 man-hours per ton on the DeCarie units at the 24th Street plant and 0.412 man-hours per ton on the DeCarie units at the central plant. Inasmuch as a man-hour of stoking labor costs the city about $1.15, it will be seen that, with the Monohearth, the stoking labor costs per ton, under actual operating conditions is 31.3 cents, as compared to 47.4 cents at the 24th Street plant and 66.2 cents at the central plant, the cost of using the DeCarie units.

During one year's operation, a 125-ton DeCarie furnace at the 24th Street plant incinerated 32,500 tons of refuse for a stoking labor cost of $21,515.00. A 175-ton DeCarie unit at the central incinerator incinerated 45,000 tons of refuse per annum, at a stoking labor cost of $21,567.00. Thus the cost of incinerating 78,000 tons in the DeCarie furnaces amounts to $43,082.00 for stoking labor or an average of 55.2 cents per ton. It will be seen that the acutal average saving in stoking labor to the city amounts to 23.9 cents per ton when the Monohearth is used.

The cost of the additions to the two incinerators was $524,000, of which $105,000 was a grant from FWA because of the war load. The plant was designed by the city engineer's staff under the director of George R. Thompson, City Engineer, and the writer, who held the position of Senior Mechanical Engineer at that time. E. V. Tait was the construction engineer for the Nichols Engineering and Research Co., New York, N. Y., builders of the addition, and suppliers of the Monohearth incineration units.

When and How to Grout The Outside of Well Casings

GROUTING the outside of a well casing with a cement slurry is a method that should be investigated whenever you want to seal off any particular aquifer thoroughly. In a paper appearing in the American Society of Civil Engineers' *Proceedings*, No. 9, Vol. 72, Alfred Machis described how this method was used in Baltimore to prevent the intrusion of salt water through certain aquifers.

In Baltimore, various water-bearing strata that had outcrops in the sea were so heavily drawn upon by wells that sea water permeated the entire layer. Industries and others drilled wells to a lower stratum that was not so polluted, sealing off the salt stratum in the usual manner. However, salt water found its way down to the new aquifer through the annular space between the outside of the well casing and the drilled hole, thus contaminating the new supply and running the chloride content as high as 3,000 ppm in certain wells. The problem could not be solved by drilling new wells, because these also must penetrate the polluted stratum and will allow the undesirable water to seep down between the wall of the casing and the side of the well hole into the new supply.

To eliminate this difficulty, Mr. Machis began a study in the laboratories of The Johns Hopkins University, Baltimore, Md., investigating the possibility of pumping a thin cement slurry around the outside of the well casing. Laboratory tests indicated that when pumping these slurries against sands of a uniform gradation from coarse to fine, the slurry would penetrate only slightly into the sand, and the pressure applied would remove the excess water, reducing the slurry from 16-20 gallons per sack to 4-6 gallons per sack. The initial slurry concentration apparently has no bearing on the volume, strength, or permeability of the final product. To grout off a large area, a thin slurry can be used in which the water serves merely as a vehicle to carry the cement particles to position. To grout off a given formation without allowing the slurry to spread over other strata, a thick slurry applied under high pressure sometimes is preferable.

The process of cement grouting has been used for many years in the oil well industry, but has not found such ready application in the water field. Its application would be particularly useful not only to seal off salt water intrusion, but also to prevent any sort of pollution from intruding through an aquifer, whether salt, bacteria, acid, or other.

A fear that the wall of the well will not stand during a grouting operation, particularly in sand and gravel strata, apparently is unfounded. Particularly when the well is drilled by the rotary process, the drilling mud gives a firm, easily handled well hole. Drilling records from the oil industry indicate further that clay and shale formations often fall away more quickly than sand and gravel. This probably is caused by the swelling and heaving in the layers of sand and gravel deposits.

Grouting can utilize a thin cement slurry successfully, as this photograph shows. In this case a slurry consisting of 14½ gallons of water per sack of cement was poured against 30- to 40-mesh sand at a pressure of 20 pounds per square inch. No measurable quantity of cement passed into the sand. The photo taken immediately after pressure had been applied shows that this thin slurry can be reduced to a consistency sufficient to maintain its own weight without slumping.

Know Your Chlorine Residuals

DON'T say merely "chlorine residual." To give a true picture of what is happening in your distribution system, identify them further, either as "combined available chlorine residual" or "free available chlorine residual." Joe Chamberlain, sanitary chemist of Wallace & Tirnan Co. Inc., Newark, N. J., pointed this out in a paper presented at the Kentucky-Tennessee section of the American Water Works Association held recently in Knoxville.

You have a *combined available chlorine* residual when the chlorine present has combined with the nitrogen compounds to form pure chloramines with ammonia, and chloramines or other similar derivatives with organic nitrogen compounds. You have a *free available chlorine* residual when the chlorine present is in the form either of hypochlorous acid (HOC_1) or as the hypochlorite ion ($-OC_1$) or both, depending upon the pH of the water carrying the residual. This type of residual does not refer to molecular chlorine (Cl_2). This is found only in water solutions having a pH of 3.0 or less, such as chlorine water from a feed chlorinator. Below a pH of 6.5, you have only hypochlorous acid when you have a free available chlorine residual. Above 9.5, you will have the hypochlorite ion. Between these two ranges you will have a combination of both.

Combined residual chlorine has these characteristics:

1. It is a relatively weak oxidizing agent.

2. It is slow in killing bacteria. Under normal pH conditions it takes 100 times as long as free residuals; or with the same contact time it takes 25 times the concentration. Only when the pH is above 9.5 does combined available chlorine kill more readily than the free.

3. It does not oxidize many taste and odor producing substances, but it may prevent chlorinous tastes by having the chlorine combine with ammonia before it has an opportunity to produce partially oxidized chlorinous derivatives.

4. It will not oxidize manganese and cause its precipitation, but it will oxidize ferrous iron to the ferric state and cause it to precipitate out.

5. Since it is a weak oxidizer, it is persistent and will remain available to the water for a long time.

6. It can be aerated from water to some extent; it is only slightly affected by sunlight.

7. It is particularly useful, moreover, in waters where the organic matter is so high that the cost of the free

residual chlorination would be prohibitive.

In contrast, *free residual chlorination* has these characteristics:

1. It is a strong oxidizing agent and will kill bacteria in a matter of 2½ to 3 minutes. As noted previously, it does not kill so readily in waters of high pH.
2. It oxidizes many taste and odor producing substances, as well as other substances, sufficiently to prevent partially oxidized chlorinous derivatives. It will not, however, eliminate all taste and odor problems.
3. It will oxidize both iron and manganese and cause their precipitation.
4. The residual is persistent if the chlorine demand of the plant and distribution system are satisfied.
5. It cannot be aerated from the water but is rapidly dissipated by sunlight.

The break-point process is, of course, only a phase of free residual chlorination and may be referred to as the application of chlorine to water containing ammonia to produce free residual chlorination. If your residual is 85% or more free available chlorine, the specifications for this type of treatment, free residual chlorination, are met.

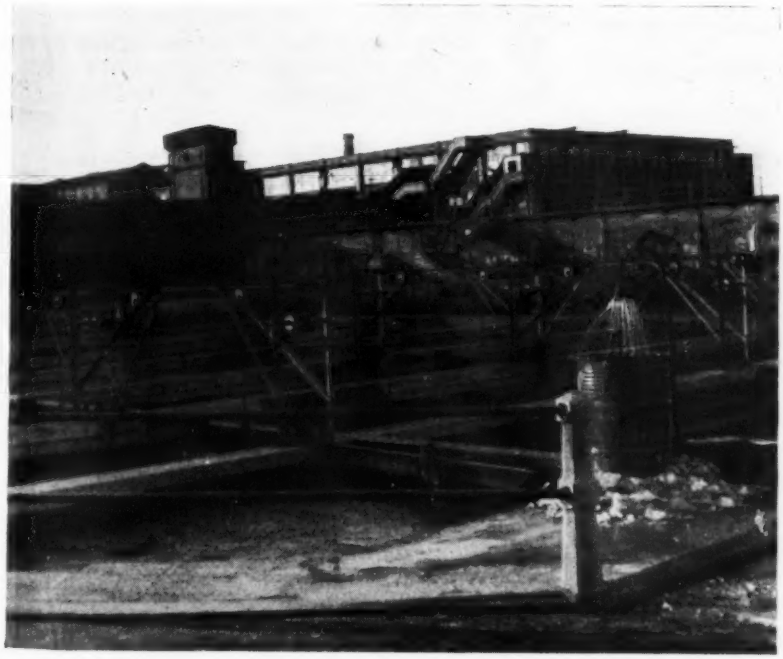
How to Reduce Main Sterilization Work

BE SURE a main is sterile before installing, be careful in installing it, and you may eliminate entirely the need for sterilizing it afterwards. E. M. Griffith, distribution engineer, Racine, Wis., water department, brought this out in a paper delivered recently before the Wisconsin section of the American Water Works Association, Green Bay.

The Racine pre-sterilization practice consists of washing and chlorinating with a swab-spray arrangement consisting of a 21-foot length of ¾-inch pipe fitted at one end with a hose connection and a drilled pipe cap on the other end that forms a spray nozzle. Immediately behind this nozzle are three ½-inch thick circular felts separated by ¾-inch wood discs. When the stored pipe is dirty, the workmen use this swab-spray with plain water to wash the pipe. Immediately before placing the pipe in the trench they use the same device to wash the pipe again, this time using a calcium hypochlorite solution containing 200 ppm of available chlorine. They also carefully wash out each joint with the same solution and then install a 3/16 x 5/8-inch Quaker extruded rubber packing soaked in the same concentration in place of jute. In one typical line involving a 12- and 16-inch main, samples are taken after one thorough flushing. Subsequent waiting for 60 hours showed no gas in 48 hours, and the bacteria counts on the four samples were 0, 0, 0, and 8.

As a contrast, a set of mains were laid in a new subdivision outside the city limits by a private contractor in which the joints were made with unsterilized jute.

How's This for Accurate Chemical Feeding?



Here is an alum feeding operation that ought to evince sympathy from any Stateside water works operator. The Shanghai, China, Water Company had to set up a makeshift method of adding alum by sprinkling water over a barrel filled with uncrushed alum, since the wartime product could not be crushed properly. Norman Gordon, Brooklyn, N. Y., contributed the above photograph.

Saginaw Valley Analyzes Water Problems

TOO LITTLE water for cities, too much pollution, and too many floods seem to summarize the problems facing the Saginaw Valley region of Michigan. The twenty-county region comprises over four million acres, including much of the state's best agricultural land. It is drained by four rivers which meet near Saginaw to form a fifth, the Saginaw River.

Water supply is a constantly increasing problem within the region. The geological formation is not conducive to the production of much fresh ground water. Flint and Mt. Pleasant are at present searching for an additional underground supply, and the water tables at Owosso and other cities have lowered dangerously. This lack of water may hamper the region's industrial growth in the Flint area. Saginaw and Midland recently awarded a joint contract for an 11-million-dollar project to bring water from Lake Huron in order to solve their problem. Pollution, particularly below the industrial cities, has made the waters of the rivers unsuitable as a source of water supply.

A Saginaw Valley Regional Planning Commission, organized December 9, 1946, under the provisions of a state enabling act, is attempting to solve the valley's problems on a drainage basin basis. The new commission hopes to obtain the assistance of the U. S. Army Engineers in making field surveys, studies, and plans and is now preparing for a hearing by the engineers on the project, according to County Planning Engineer Gale Bigson of the Michigan Planning Commission, who has been assisting the new agency and its predecessor, an advisory committee to the state commission. Factors being considered in planning for the development of the region include soil conservation, upstream storage, drainage, flood control, erosion control, lake and stream stabilization and sanitation, water supply, recreational development, and ground water conservation.

GARBAGE DUMP
to Garden Spot
with the
"ONE-MAN CREW"

It's an easy, economical job to transform a city dump into a garden spot with the "one-man crew" . . . an Oliver "Cletrac" crawler tractor equipped with a Drott Bull Clam.

The "one-man crew" is an ideal unit for sanitary fill work. It packs down the refuse, covers it with dirt, and levels it off, flies are controlled . . . public health is protected. The unit is also employed to dig trenches preparatory to dumping the garbage. Excavated earth is then used as a protective cover. With the tractor and bull clam, one man is the equal of a full working crew employing less modern methods.

Oliver "Cletrac" tractors are especially suited for municipal work. They are ruggedly built for long life with minimum maintenance. Their exceptional load handling ability and greater maneuverability speed job progress.

For all the facts, write The OLIVER Corporation, Industrial Division, 19300 Euclid Avenue, Cleveland 17, Ohio.

1. *"One-man crew" removes dirt from bed of old creek before garbage is dumped.*

2. *After garbage is dumped in creek bed, the "one-man crew" packs it down firmly and levels it off.*

3. *Dirt, previously removed from creek bed, is carried by unit and spread over garbage.*

Cletrac

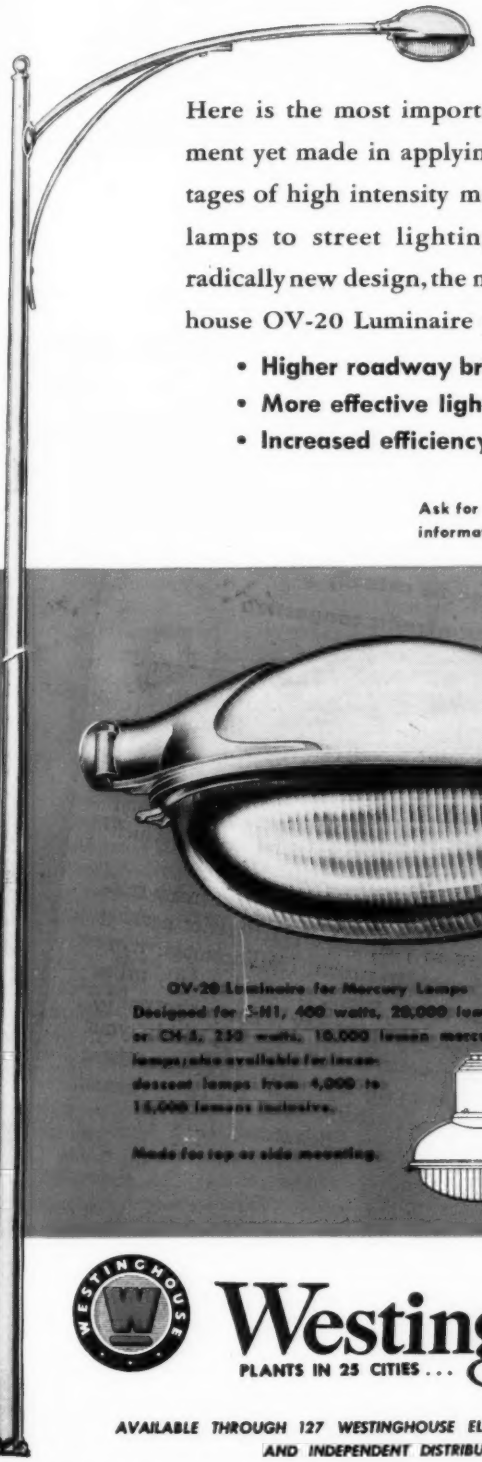
OLIVER
Cletrac
SALES
SERVICE

a product of

The OLIVER Corporation

An Entirely NEW LUMINAIRE

designed specifically for MERCURY LAMPS



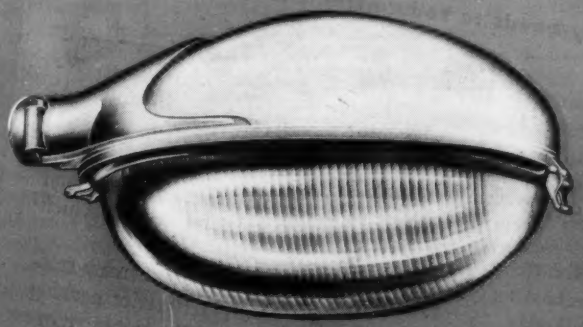
Here is the most important advancement yet made in applying the advantages of high intensity mercury vapor lamps to street lighting. Through radically new design, the new Westinghouse OV-20 Luminaire provides:

- **Higher roadway brightness**
- **More effective light control**
- **Increased efficiency**

Check the specific advantages of this new design in meeting tomorrow's street lighting needs. For additional information, consult your nearby Westinghouse office or distributor or write: Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.

J-04113

Ask for bulletin B-3790 which gives complete information on the new OV-20 Luminaires.



OV-20 Luminaire for Mercury Lamps
Designed for H-H1, 400 watts, 20,000 lumen or CH-5, 250 watts, 10,000 lumen mercury lamps; also available for incandescent lamps from 4,000 to 15,000 lumens inclusive.

Made for top or side mounting.

Why the new Westinghouse OV-20 gives more effective light control

- Improved vertical light distribution pattern gives more uniform pavement brightness
- New optical system controls light in the high angles; produces less glare than former designs
- Shallow glassware provides a smaller luminous object, minimizing glare at high angles
- Oval reflector contour reflects less heat and light back through lamp, allowing longer lamps to be used without impairment of life
- Elongated light source gives wider brightness pattern on wet road surfaces

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PLANTS IN 25 CITIES . . . OFFICES EVERYWHERE

PLANNED LIGHTING

AVAILABLE THROUGH 127 WESTINGHOUSE ELECTRIC SUPPLY OFFICES AND INDEPENDENT DISTRIBUTORS

"Tests Convinced Us... PEOPLE LIKE TROLLEY COACHES BEST"

—SAY CLEVELAND TRANSIT SYSTEM OFFICIALS

Modernizing public transit with vehicles people actually prefer may be just what your city needs to reduce traffic congestion

To determine the public's opinion of various types of transit vehicles, Cleveland tested streetcars, motor buses, and trolley coaches on its Hough Avenue line in 1935. Increased riding indicated people like clean, quiet, smooth-riding trolley coaches best.

This public preference has led to the extensive use of trolley coaches in Cleveland's huge transit modernization program. Today 300 additional units are in service or on order. Clevelanders are riding trolley coaches more and more—and by choice are helping solve the traffic congestion problem by riding public transit instead of automobiles.

Proved tops in popularity everywhere, fast, comfortable, smooth-riding trolley coaches keep traffic congestion down by pushing transit riding up. This means fewer automobiles downtown, fewer costly street-widening projects, and fewer parking headaches. And when transit service is good, people and goods move easily throughout every part of the city. Business prospers and property values stabilize at levels which produce steady tax receipts.

Here's how you can eliminate many traffic jams in your city: (1) Restrict parking on downtown streets. (2) Encourage more people to use public transit for daily urban travel. And if your city is not yet served by trolley coaches—(3) discuss with your transit company the possibility of using these up-to-date electrics. *Apparatus Dept., General Electric Company, Schenectady 5, N. Y.*

See LIFESTREAM OF THE CITY, the movie that promotes transit service. Your G-E representative will arrange for a showing.

Listen to BULLDOG DRUMMOND, the transit industry's national radio program. Mutual Network, Friday, 9:30 p.m. EST. See your newspaper for local station.

GENERAL ELECTRIC

187-170-6680

Traffic Regulation

Supplying Additional Signals Without More Wires

By P. E. BENTON
Superintendent of Signals
Dayton, Ohio

PERHAPS the most pressing need of city electricians is for more wires to accomplish additional functions or operations through cables that are already assigned to full capacity. Usually, it is the large expensive cables entering control or headquarters buildings that are constricted. Replacement of such cables is very expensive. Cities planning installation of entirely new cables are faced with a new high in cable costs which are likely to remain that way for some time.

There has been developed a torsional relay, so called because a torsion pendulum is employed to give resonant frequency response. This relay may be employed to accomplish additional functions on cables which are already fully assigned without disturbing the presently assigned functions. Let us take an example of its use:

Assume a five-conductor cable exists in a conduit running the full length of a thoroughfare and is fully assigned for use in a traffic control system. Unexpectedly, your traffic department requests that provision be made to permit the central fire alarm office to turn the traffic signals to an "all red" aspect at the intersection of the thoroughfare and a remote cross street down which a fire detail makes frequent runs.

Utilizing two already assigned wires in the five-conductor cable, a torsional relay may be installed at the required intersection. Using a suitable frequency generator located in the central fire alarm office, the turning of traffic signals at the remote intersection to "all red" may be accomplished with existing wires and without having to install a new and expensive cable.

In our own city, we prefer to give fire and police departments an all-red signal when they are operating within our congested downtown area. This area is controlled by sixty-three installations of signals. At present, we have five areas in our control that can paralyze traffic when an emergency arises in the congested area. The safety department, in setting up its action plan, requested twenty-two control sections in order that too much of the business area would not be paralyzed at one time. The control wiring, to accomplish this, indicated seventy-two wires in the main control cable, which, however, included remote cycling double and triple offset, flashing red and amber, etc., plus thirteen spare wires.

The torsional relay is not restricted to the traffic signal field. It can be used to switch remote radio receivers, start and stop remote transmitters, turn on and off remote airport lighting facilities, and operate remote features in precinct stations from headquarters. It can also accomplish pre-arranged cable wire transfers from central fire alarm headquarters to engine houses in the event of cable failures, and many other innovations.

Relay Described

The relay is a frequency selective device made by Wallace and Tiernan Products, Inc., Newark 1, N. J. It may be adjusted at the factory to operate at any desired frequency between ten and twenty cycles per second. Two "bar" magnets are mounted on a shaft, which also carries a weighted cross arm and a spiral spring. The spiral spring causes the shaft assembly to oscillate at a rate which is determined by the length of the spring and the size and position of the cross-arm weights when the proper current is supplied to two coils which surround the bar magnets. If the coil current is interrupted, or alternated, at a rate equal to the natural period of the aforementioned shaft assembly, the assembly will start to oscillate, building up to full amplitude in three seconds or less, depending on voltage, and with each swing of the oscillating assembly a pair of contacts is closed momentarily. These intermittent contact closures can be used to operate a lock-up relay, or a slow-release type of relay may be used. Since it is better practice not to impress voltage on the relay coils for a very long period, the lock-up circuit is preferred. To unlock the relay circuit, a separate torsional relay may be used; or, if the time cycle of the lock-up is definite, a timing relay may be used to unlock the circuit, or direct current may be used.

Tests have been conducted over five miles of 22-gage, paper-insulated cable, and oscillograph studies show no distortion of wave form at the relay end. This confirms the belief that for practical municipal use there will be no restriction on the length of cable that can be employed. Nor is the relay restricted to use in a multiple circuit; it can be successfully used in series.

From an address before the Miami Conference of the International Municipal Signalmen's Association in November 1946.

Trolley Coaches on Cold Hills

Trolley coaches, operated by overhead wiring, replace street cars in Duluth.

DULUTH, MINN., extends for miles along the shorelines of Lake Superior and the St. Louis River, but does not reach far inland. Residents jokingly refer to it as the city that is twenty-six miles long, three miles wide and a mile high. To complicate further the public transportation problem, the topography of the territory served is hilly and is broken by many ravines and densely wooded parks. As a result, there is a low density of population in proportion to area—about 1,600 persons per square mile.

Trolley coaches are used as the main

DUAL
Automatic Parking Meters Set the Pace in ECONOMY

Duals are built with an eye to economical operation—as well as to *quality standards* in every detail.

They've set the pace in economy because of their rugged construction, accurate design, and low installation and maintenance costs. For extra dependability, *their meter movement—the most vital part of any meter—is manufactured by the makers of the famous Seth Thomas clocks.*

Tamper-proof and weather-proof, Duals are money-savers and money-earners. They pay for themselves, and provide a long-lived source of revenue for other municipal services.

Write today for details on how Duals can help solve your community's traffic-control problems—on how they can be a profitable community investment. Ask for the informative free booklet—DU-501—or call on our engineers for friendly cooperation.

THE DUAL PARKING METER COMPANY

A subsidiary of The Union Metal Manufacturing Co.

MILFORD BUILDING • CANTON 2, OHIO

WHEN IT COMES TO CONTROLLING PARKING YOU CAN DO IT BETTER WITH DUALS

transit vehicles in Duluth and are operated on lines formerly served by street cars. Motor buses are also operated in this city, and their routes extend to many of the outlying sections.

Trolley coach service, says the Ohio Brass Company, Mansfield, Ohio, originated in Duluth in 1931 on the Lester Park line. Because this trolley coach service met with a high degree of public acceptance and because the vehicles themselves were efficient and economical to operate, the line was extended in 1934. The remaining street car lines, the Grand Avenue and the Woodland, were changed over to trolley coach operation in 1939. Today, the citizens of Duluth enjoy the quiet, speed of thirty-two trolley coaches.

According to Duluth Superior Transit Company officials, these thirty-two trolley coaches have done an outstanding job of passenger hauling and have proved dependable even during the most severe winter weather. This statement takes on added significance when we consider that long periods of subzero weather are not uncommon to Duluth winters. In January 1945, the temperature dropped to 25 below zero. Despite this extreme cold, the system's trolley coaches stayed right on the job and maintained their usual frequent headways. Northern Minnesota winters pose no difficult storage problems for trolley coaches. They are stored outdoors just the same as they are during the summer months.

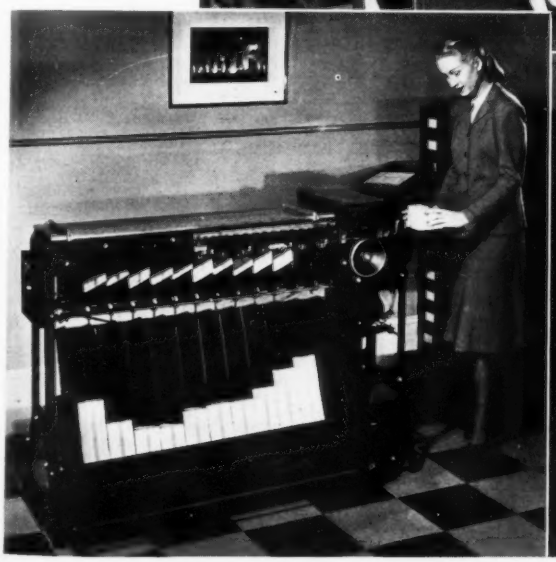
Proof of how they can "take it" is borne out by the fact that the original coaches, purchased fifteen years ago, are still in daily use.

Getting the Goods on Traffic Accidents

THE President's Highway Safety Conference* held in Washington last May closed with definite recommendations for action. Carrying out most of them successfully requires the keeping and examining of records. This has stimulated municipal interest in machines for developing and analyzing records, in improved procedures, and in systems and housing for the accident and traffic records necessary for effective action and control. The appliances and record systems are already in use in the larger police and traffic departments. In many more cities—smaller communities as well—these devices will be found operating in other city bureaus also. An understanding of their other general municipal application should be helpful in selecting the proper mechanization for a particular function.

Sound traffic measures must be selected and taken on the basis of factual experience. Such experience is derived from sound reporting of accidents

* "Truman's Safety Conference Outlines Program of Action," THE AMERICAN CITY, June 1946.



Top: A Film-a-record installation of camera and reader available now. Bottom Left: A card-counting sorter. Bottom Right: A modern fire-resistant Kardex file surmounted by an Index Visible file.

THE CITY ENGINEER'S CHECK LIST of PRISMO BULLETINS

BULLETIN 746—"PRISMO FOR INCREASED TRAFFIC SAFETY"

A bulletin designed for the city traffic engineer who desires versatile reflective markings with the greatest economy. Write for Bulletin 746.

BULLETIN 461—"PRISMO—THE SPHERE OF SAFETY"

This bulletin describes graphically the use of Prismo for centerlines, pavement markings, signs, markers and sundry specialty lines. Prismo Sphere Dispensing Equipment is illustrated as well as laboratory procedures at the Prismo Laboratories. Write for Bulletin 461.

BULLETIN 443—"PRINCIPLES OF REFLECTORIZATION"

A treatise on the principles of reflectorization developed and technically presented by the Prismo Laboratories. Ask for Bulletin 443.

BULLETIN 244—"IT'S EASY"

The Prismo Sign Kit permits easy, economical reflectorization of signs both embossed and flat. Spraying reflectorizing materials on existing signs is outlined in Bulletin 244.

BULLETIN 466—"VERTICAL SURFACE APPLICATION OF THE PRISMO SIGN KIT"

The newest development in Prismo research is the reflectorization of vertical surfaces including signs in place. Equipment is described as well as the simple process—all with surprisingly low cost. Specify Technical Bulletin 466.

BULLETIN 462—"PRISMO SIGNS AND SIGN MATERIALS"

This bulletin is an exposition of field and laboratory proved facts concerning Prismo Signs, the Prismo Sign Kit and the Prismo Sign Finishing procedures. If you're interested in greater overall sign visibility at amazingly low cost, ask for Technical Bulletin 462.

THE PRISMO SAFETY CORPORATION

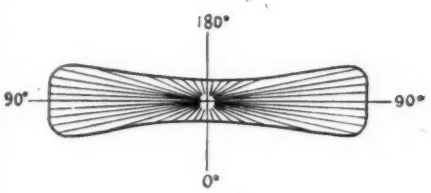
Municipal Division

HUNTINGDON . . . PENNSYLVANIA

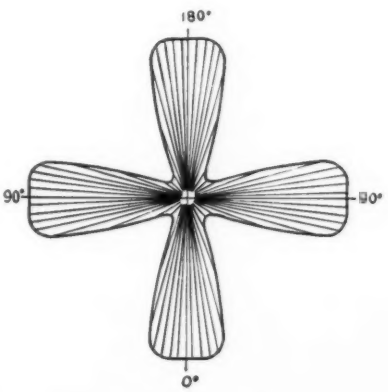
DISTRIBUTION PATTERNS *are Important in* STREET LIGHTING

Holophane Refractors SHAPE THE LIGHT *to the Street*

Typical Residential Street Lighting — I.E.S. Type 1
Photo Courtesy: Detroit Edison Company



TYPE 1 — 2-Way for Mid-Block



4-Way for Intersection

The latest "code" on traffic illumination—"Recommended Practice of Street and Highway Lighting, 1945" issued by the Illuminating Engineering Society, points up the importance of proper light distribution. Five "ideal" distribution types are described to meet most street and highway lighting requirements. *Holophane Refractors have been designed to meet each of these exacting specifications.*

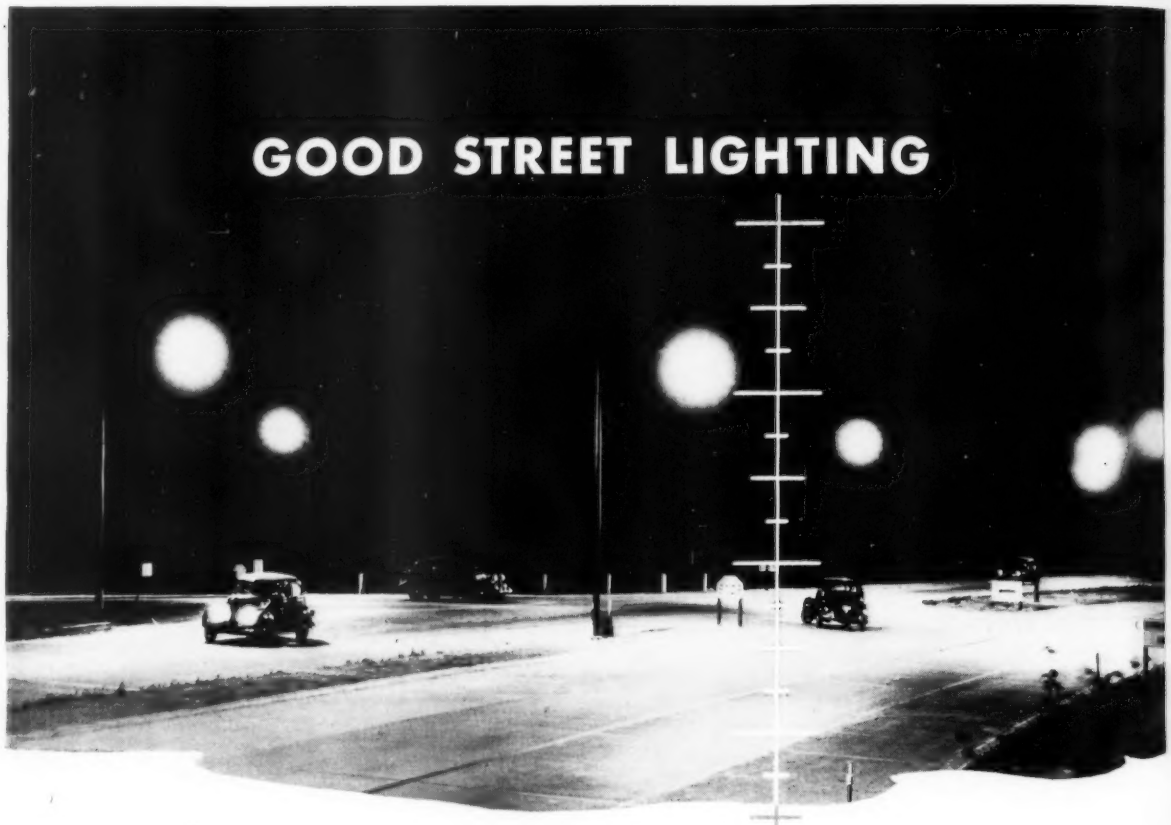
Type I distribution is for luminaire locations that are approximately over the center of the roadway. Two beams of light are projected up and down the street. To insure efficiency and the recommended illumination, light that would fall outside is largely directed to the roadway. *Street lighting units equipped with Holophane 2-Way Refractors will accomplish this result*.

In addition, for street intersections, the Holophane 4-Way Refractor provides two supplementary beams for the cross streets.

For these reasons, Holophane Refractors are the essential light controlling element in luminaires of leading manufacturers of street lighting equipment. *Always specify Holophane Refractors.*

HOLOPHANE COMPANY, INC. . . . *Lighting Authorities Since 1898*

Street Lighting Department, Newark, Ohio • Holophane Co., Ltd., 385 Yonge St., Toronto, Can.



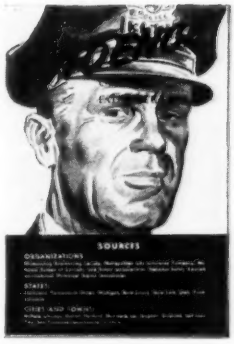
A civic benefit you can measure

#2 . . . in Accidents Averted

WHEN adequate traffic safety lighting goes *in*—most of the danger of night traffic accidents goes *out.*

For example, Los Angeles recently relighted 8 locations—and night accidents promptly dropped 50 per cent. By installing good street lighting on one street alone, Spokane cut night smash-ups from an average of 3 a year to about one every two years!

Average reduction in night traffic accidents, country wide . . . in cities, towns, villages . . . is one out of two. Thus, modern street lighting pays for itself *many times over* . . . in accidents prevented, in fatalities averted. You get all its other benefits as a bonus: crime prevention, increase in real estate values and in civic pride, the improvement of local business.



For ideas you can use in selling better street lighting to your community, contact your electric utility and write for "Evidence," just published by The Street & Traffic Safety Lighting Bureau, 155 E. 44th St., New York City.

GOOD STREET LIGHTING
THE SIGN OF A GOOD PLACE TO LIVE

and analysis, traffic counts, direction of traffic flow, and vehicular speeds. The majority of accidents occur in the period from dusk to dawn. Adequate street lighting is found in too few cities.

Good factual analysis would indicate the advisability of installing reflectorized pavement markings for center lines, pedestrian crossings, and stop indications. The factual data which would justify these measures are more easily developed through the use of such equipment as printing calculators, tabulating equipment, and modern methods of indexing and filing of accident reports.

An ingenious and eminently practical application of visible record systems such as Kardex will furnish comprehensive, rapid reference to such records as intersection inventories and accident experience. Having such records, it is possible to examine an accident in terms of the physical facilities at the intersection at which it occurred.

Disposition of fines and the allocation of funds from fines, licenses, parking meters, etc., are facilitated by the use of the bookkeeping machine or the Syncro-Matic, which simultaneously combines normal machine accounting procedures with the provision of punched cards for statistical purposes.

Wherever larger master name files exist, the Soundex method of indexing facilitates the time of searching and finding individual records. This method, as the name implies, brings together all names of similar sound, however spelled, and eliminates the hazard of general transcription errors and of poor writing.

In all municipal departments records have accumulated. Without adequate personnel their use has frequently been curtailed. Equipment that is now actually available is the most important. Portagraph and Dexigraph, for photographic copying of records simply and accurately, are now available. For records that serve only for occasional reference, Film-a-record, which features Microdex for proper indexing, can reduce your storage space 160 to 1. It is possible to have your record systems microfilmed for you, with indexing for ready reference guaranteed. The Microdex method of finding records has reduced searching time by 86%. Thereafter the city, with its own personnel and equipment, can maintain this record on a current basis.

Traffic Analysis First Step to Action

FOR the last two years, a committee of the Highway Research Board, working with the Public Roads Administration, various state highway departments, and city officials has developed new techniques, based upon interview sampling methods, to determine the mode, purpose, and time of travel for every person residing within a metropolitan area. Chairman of the committee is Grant Mickle, traffic engineer of the Automotive Safety Foundation, and the secretary is John Lynch of the Public Roads Administration.

Metropolitan area traffic studies of this home-interview type have been completed already or are being made now in fifty-five metropolitan areas, ranging from 20,000 to over a million population. Illustrative of how these data may be applied to practical traffic problems is the recent report on the highway plan for Fort Wayne, Ind., in which the officially approved long-range traffic plan provides for construction of express highways, a belt highway, off-street parking facilities, more efficient street use through one-way streets and curb parking controls, and minor street improvements. The survey showed that of the 130,000 daily vehicular trips in Fort Wayne, 82% were made by passenger cars, 14% by trucks, and 4% by taxis. Of this traffic, 74% was entirely within the city. Of the 26% external traffic, 92% was bound either to or from the city, with only 8% desiring to bypass. The plan is designed to handle the 75% increase in traffic anticipated by 1965.

The two limited access express highways in the Fort Wayne plan, totaling 11.5 miles in length, will be constructed over a 10-year period, with each year's work providing a useful section of highway. It is claimed that the highways would not only "insure a permanent solution of the major traffic problems in Fort Wayne," but would "reduce vehicular traffic accidents approximately 30%, saving lives and property loss estimated at $400,000 annually. . . ." Savings in driving costs are estimated at $700,000 yearly.

A practical survey manual will be issued by the Origin and Destination Survey Committee soon. Work for the coming year will include a report on practical application of the field data to such problems as marketing analysis, expressway design and location, off-street parking, transit improvement, and more efficient use of existing traffic facilities.

PYKE JOHNSON, *President*
Automotive Safety Foundation
700 *Hill Bldg.*
Washington 6. D. C.

Englewood Tames Wild Drivers

WHEN drunken and fast driving caused twenty-six major accidents in six weeks, Mayor Donald A. Quarles of Englewood, N. J., went to the city's seventeen barrooms and taverns to set matters straight. Result: during a three-week safety campaign, launched December 15 and continuing through the usually hazardous Christmas and New Year holidays, only one minor accident was reported in Englewood.

Alarmed by the mounting traffic accident toll in his city, the Mayor called a meeting in the city hall and pointed out that, while Englewood had been particularly hard hit by a series of accidents (seven deaths and nineteen injuries in six weeks), it was all a part of a national trend. Many of the local accidents had been caused by out-of-town drivers, and if, through wide publicity, it became generally known that Englewood would brook no violations of its traffic laws, greater care would be shown by motorists driving through the city.

The Englewood Press printed placards stating "Drunk Drivers Go to Jail in Englewood" and handed them to Chief Charles A. Peterson. The Chief and Captain Abrams of the traffic bureau then visited every bar and tavern personally, urging the bartenders to adopt a "no more for you" attitude toward customers inclined to over-indulge. Police Court Judge Berthold Vorsanger served an ultimatum on all drivers stating that if they appeared in his court, they could expect the full penalties under the law.

Three weeks later, with the holiday season over, Mayor Quarles and his helpers found that while there had been a few dented fenders and locked bumpers, only one accident injury had been reported.

Parking Lots Recommended

FIVE off-street parking lots to provide 1,072 car spaces, or 880 more than are now available, are recommended in the Traffic and Parking Plan for Glens Falls, N. Y., which was prepared by Harold M. Lewis, consulting engineer of New York, N. Y.

All suggested sites are within 750 feet of some portion of the central business area. The plan calls for lots so designed that no attendent is necessary to their operation, for parking berths diagonal to driveways, and for pedestrian access to adjacent business streets. The estimated cost of the five recommended sites is $402.000.

when you plan Street Lighting

Use this GE service, available to all progressive communities

Whether you are considering replacing a major portion of your street lighting system—or the lighting of a single street or of an intersection with an accident record—it will pay you to *plan* the installation with the aid of General Electric lighting specialists. For unless your existing equipment is really modern, you will not get either the best in lighting or the most in efficiency by simply extending your present system.

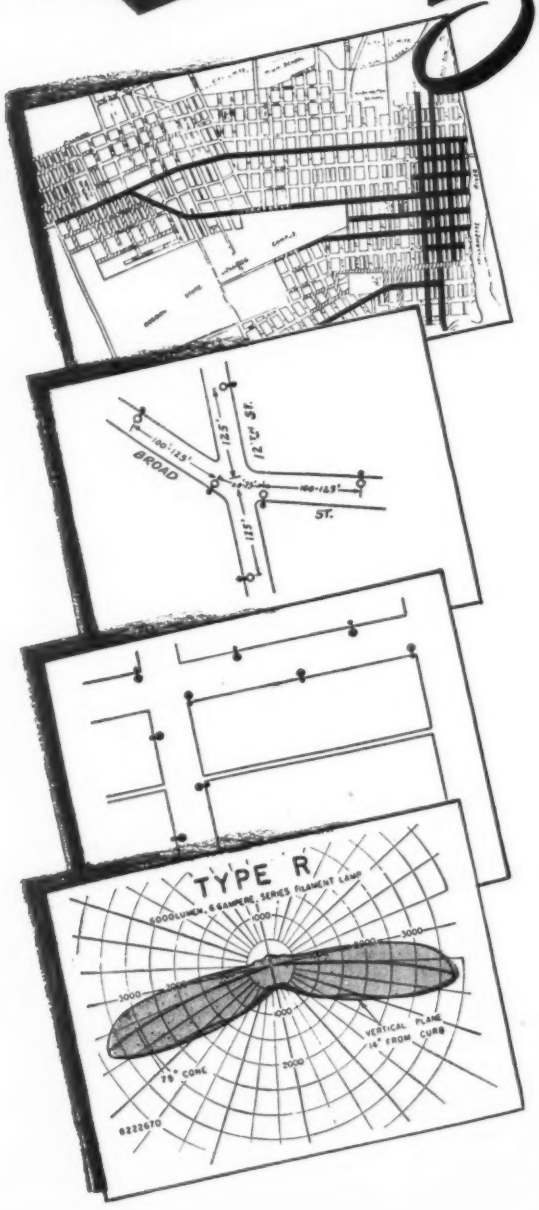
Street lighting, like other engineering sciences, has progressed a long way since the majority of present systems was installed. Authorities are recommending more light, better controlled light, as automobile speeds increase. Modern luminaires do this job with more light per dollar than older types of equipment.

DETAILED PLANS FOR YOUR PROBLEMS

General Electric Lighting Specialists will be glad to assist you in planning any street lighting installation. These Specialists, located in G-E offices throughout the country, are ready to help public officials—in collaboration with the electric utility company, if one is involved—to work out requirements for a single corner or for an entire city. They are backed by the Illuminating Laboratory at Schenectady, and will consult with this organization on any unusual problems.

AVAILABLE WITHOUT COST

This service is available without cost through the nearest General Electric office. It is of top professional quality. It is offered by the company that makes every type of light source and luminaire that is economically feasible for any street-lighting job—a company that is therefore sincerely interested in seeing that users get equipment that best meets their needs. *Apparatus Department, General Electric Company, Schenectady 5, N. Y.*



Typical pages from a recent street-lighting survey, prepared by General Electric, show lighting plans for a downtown street, for a particularly hazardous intersection, and light distribution characteristics of recommended luminaires.

GENERAL ELECTRIC

Outdoor Lighting

New Lighting Reduces Accidents in Houston

By F. N. BALDWIN
Director, Department of Utilities
City of Houston, Texas

Equipment shortages are overcome as city resumes illumination improvement system introduced n 1942.

TO improve the street lighting and traffic accident situation in Houston, Texas, a new street lighting program was recently completed on Washington Avenue. This is in addition to the comprehensive 1942 program* embracing 3,500 bracket-type lights, of which 1,491 of 250 candle power have been installed.

The 1946 program called for 3,000 new units installed by the end of that year. Shortages of equipment made this impossible.

The Washington Avenue installation consists of 213 10,000-lumen vertical base luminaires for a distance of thirty-six blocks. The lights were turned on October 29, and Police Sergeant Curtis Aaron reports a 15% drop in accidents. From October 29 through December 12, there were only forty-four accidents on this newly lighted strip. In other words, during the forty-six-day period before new lighting, accidents averaged 1.2 per day, against only 0.98 during the forty-five days of improved visibility.

Another new installation is on South Main Street. Here, there are 104 600-cp luminaires, 150 feet apart, staggered on ornamental standards designed for this job. They are the Houston Lighting and Power Company's Unit 11 steel gooseneck standards, 23 feet high with vertical base luminaires.

Lack of funds several years ago resulted in the removal of 163 street and bridge 250-cp ornamental standard lights. These will be put back into service this year. Authorization has been granted by the City council for fifty new ornamental standard lights at specific locations.

Paralleling this general line program to improve the street lighting, the Houston Lighting and Power Company has been granted permission by the city to install underground circuits in thirteen streets. These circuits will provide for the ornamental standards proposed for a new expressway through the city.

The accident experience on Washington Avenue checks with the overall picture to date. During 1941, before any one of these lights was installed, there were 11,539 traffic accidents; in 1936 there were 9,745. Satisfaction with the program is heightened by the fact that this 15½% decline in accidents happened despite the tremendous increase in population and in traffic congestion.

It may be argued that this reduction is due in part to increased police vigilance and general citizen interest in the subject of accident prevention. However, the conclusion to be drawn from the results of the study of conditions on Washington Avenue, before and after installation of the lights, is that the principal reason for the reduction in accidents is better street lighting.

* See THE AMERICAN CITY for February 1942.

Modern Street and Highway Lighting Neglected

By C. A. B. HALVORSON
Consulting Engineer
IES Committee on
Street and Highway Lighting

MODERNIZED street lighting has been neglected in the majority of communities in the United States, although in the same communities, along the same streets, modern buildings have been constructed and modern engineering practices have been applied to street construction.

Despite the neglect, the trend is decidedly toward better lighting, and Kansas City, Mo., is a typical example of the American cities today. City officials there have inaugurated a five-year plan to relight completely the 750 miles of business and residential streets. Kansas City realizes that night traffic accidents and crime can be reduced, with a subsequent reduction in insurance rates, that retail trade can be stimulated, and that civic pride and prestige can be elevated through the installation of more adequate modern street lighting.

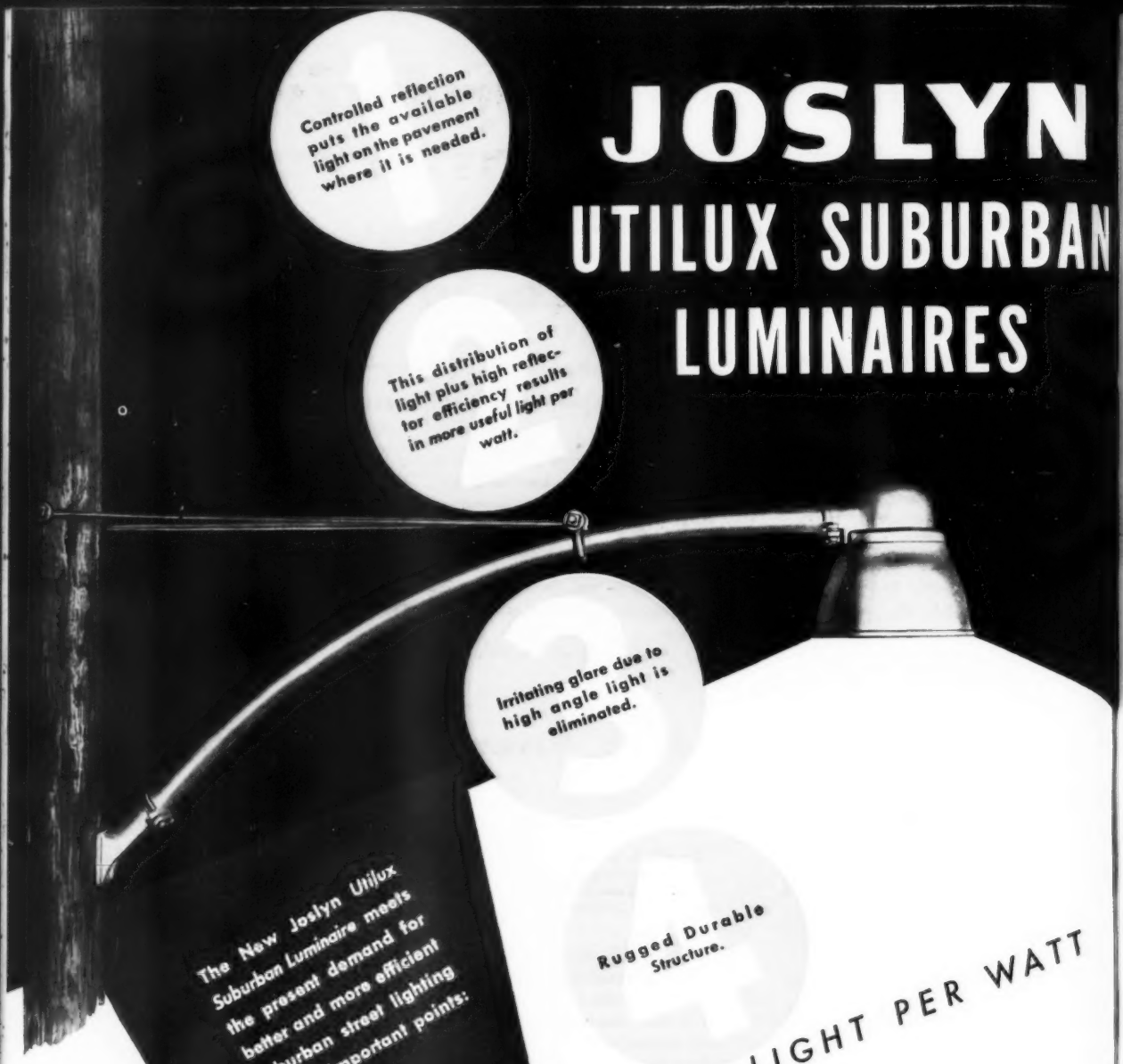
The Kansas City program is being carried out according to the specifications of the Illuminating Engineering Society's Recommended Practice of Street and Highway Lighting 1945, which classifies streets according to lighting required for light, medium, and heavy traffic and which takes pedestrian traffic into account. Traffic safety was the main consideration of the IES Committee on Street and Highway Lighting in preparing the new code.

The recommendations of the committee were discussed in the July 1946 issue of THE AMERICAN CITY.

The committee urges that luminaires be mounted at a higher elevation from the pavement to bring about an increase in the distribution of light and a reduction in glare. Even pavement reflectivity is considered in the new code to make lighting effective as an accident preventive. For simple intersections, illumination to the same intensity as the total light specified for the two intersecting streets is recommended. Complex intersections, however, require a much higher level of illumination.

Sparsely illuminated residential and light and medium traffic streets will become a thing of the past as the 1945 code is put into effect in city after city. The code will mean much in the street lighting of America, for it gives city engineers the guide which is accepted by most manufacturers, utilities, and consulting engineers.

JOSLYN
UTILUX SUBURBAN LUMINAIRES



Controlled reflection puts the available light on the pavement where it is needed.

This distribution of light plus high reflector efficiency results in more useful light per watt.

Irritating glare due to high angle light is eliminated.

The New Joslyn Utilux Suburban Luminaire meets the present demand for better and more efficient suburban street lighting at five important points:

Rugged Durable Structure.

MORE USEFUL LIGHT PER WATT

Economical both from the standpoint of initial cost and long life.

Branch offices in principal cities

•

THE JOSLYN CO.
THE SOUTH EAST-JOSLYN CO.
SOUTHERN JOSLYN CO.
JOSLYN SOUTHWEST CO.
JOSLYN COMPANY OF CALIFORNIA
JOBBERS SUPPLY CO.

JOSLYN

Complete Pole Line Equipment

20 NORTH WACKER DRIVE, CHICAGO 6, ILL.

MFG. AND SUPPLY CO.

Traffic Problems Should Not Be Greater at Night

By LOUIS J. SCHRENK
General Superintendent
Public Lighting Commission
Detroit, Michigan

FORTY THOUSAND traffic deaths and one million injuries at a cost of, say, $1,800,000,000 are not a necessary evil or the price we have to pay for progress. Authorities know, for example, that two-thirds of the nation's traffic deaths occur at night and that one of the major contributing causes of night accidents is the failure to provide adequate means for motor vehicle drivers to see quickly and easily at distances commensurate with allowable speeds. Detroit, for example, with modern street lighting, reduced its night traffic deaths on 100 miles of heavily traveled streets 59.6% over a three-year period.

Traffic engineers contend that retail stores, offices, and industrial plants can reduce present rush-hour accidents in metropolitan centers by staggering their starting and closing hours. Buying habits of the public interfere considerably with this suggested program, insofar as retail stores are concerned.

The addition of new thoroughfares and wider streets have alleviated conditions in some cities, while in others the situation has shown but slight improvement. The lack of uniformity of enforcement methods is a contributing factor. Some cities attempt to expedite traffic by insisting that the slow drivers remain in certain traffic lanes and faster drivers stay in theirs.

There are other financial aspects to the traffic situation in addition to the actual cost of accidents. Growing accident rates mean higher insurance rates for automobile owners. In some instances, there is a 25% differential in the cost of insurance in the safer, well-lighted city, as against the city which still struggles to reduce its accident rate with facilities born in another era.

Commercial vehicles represent a vast investment which is automatically increased when traffic is slowed down and the accident rate is high. This would affect taxicab companies, truckers, delivery vehicles, and highway transportation facilities, including street railways and people who use their cars in connection with their livelihood.

In addition to its effect on traffic safety, modern street lighting plays an important part in the reduction of such various night crimes as robbery, assault, purse-snatching, and juvenile delinquency. Police officials throughout the nation almost unanimously agree that modern street lights are their greatest asset in combatting these types of crime. Some cities which have studied the crime reduction brought about by proper illumination of streets contend that it has exceeded 50% in instances.

The American public, as a whole, can be aroused in a comparatively short time to a condition or situation that interferes with its rights—such as the things that cause wars, or production and distribution weaknesses which may interfere with their food supply, clothing, or housing. But it has been slow to solve the traffic problem, even though that particular problem may be costlier in lives and money than are the others put together.

For many years the hazards of inadequately lighted streets and the values of good street lighting have been given consistent publicity. The nationwide educational campaign, sponsored by the Street and Traffic Safety Lighting Bureau of New York and Cleveland, has furnished both city officials and utility executives with ideas and facts to aid them in showing the public that adequate night visibility is the one measure which will reduce traffic accidents and save lives.

Time for the Public To Say

"We have definitely outgrown the traffic problem. Let's get busy and put our knowledge of the subject to good and effective use. Let's approach the problem realistically and provide the facilities that we need to combat this evil, and divide the cost equitably among all those who benefit—not merely adjoining property owners and automobile drivers, but the people who benefit."

Things to Know About Street Series Lamps

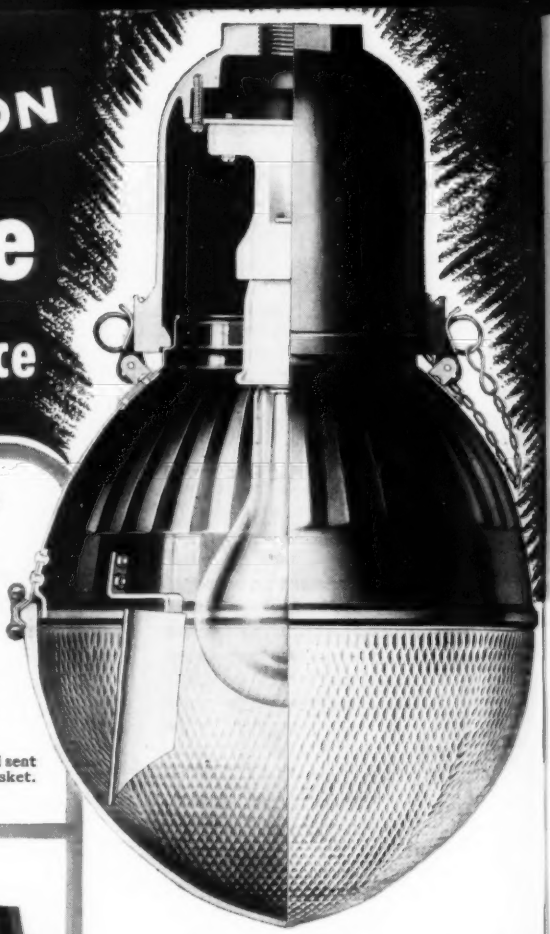
STREET series lamps are designed to operate in series on constant current circuits. The most common circuit employs 6.6 amperes automatically regulated to maintain this current flow, regardless of the number or size of lamps used on the circuit. Lamps in the larger sizes are also designed for 15- and 20-ampere operation—this higher current usually being obtained for each lamp by an individual step-up current transformer connected to a standard series circuit.

Lamps are designated by their rated initial lumen output and ampere rating, such as the 6,000-lumen 6.6-ampere lamp or the 25,000-lumen 20-ampere lamp. Wattage and voltage ratings used to designate multiple lamps are not commonly employed. Multiple lamps are designed for a definite wattage at a definite voltage, and changes in efficiency are shown by changes in lumen output. The lumen output of series lamps, on the other hand, remains fixed because it is generally specified in street lighting contracts; changes in efficiency due to improvements are reflected by changes in wattage or voltage.

On a constant current circuit the filaments for all sizes of lamps of a given current rating are of approximately the same diameter but of different length. The lamp voltage will vary with the lumen output, ranging from a few volts in the smaller sizes to 50 or 60 volts for the lamps of high lumen rating.

Series street lighting presents severe service conditions entailing special lamp construction features. In straight series operation, there must be provisions for protection against arcing at time of failure when the voltage between lead wires may be several hundred volts or even higher. A film cutout, which punctures under this high voltage and causes a short circuit when a lamp fails, is necessary for each lamp socket. Additional safety features are built into the smaller lamps

FLEXIBLE CONSTRUCTION of L-M Spherolite Cuts Street Lighting Maintenance



1. Controlled Distribution

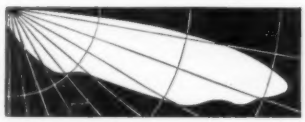
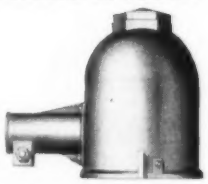


Chart shows how the combination of the Alzak aluminum reflector and the Line Material-Holophane refractor makes maximum use of *all* the light . . . spreading it over a wide area and in a controlled pattern. Light source is concealed to reduce glare.

2. Reflector

Fluted reflector is scientifically designed to insure accurate control of the reflected light. Made of Alzak-processed aluminum, the inside surface is highly specular, providing maximum light reflection.

3. Choice of Hoods

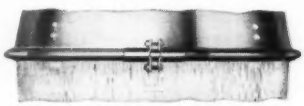


A variety of hoods can be furnished (with or without bushings): The side mounted hood above is a slip fitter and does not require a threaded pipe. Available for inner wiring, or outer wiring using gland or porcelain bushings.

4. Coil Spring Latches

Two sturdy, stainless steel spring latches fasten reflector firmly to hood. Hand operated; Make servicing easy at this point. Spring tension maintains weather-proof joint between reflector and seat of die cast hood—requires no gasket.

5. Choice of Holders



Four styles of glassware holders available: V-Band, Pressure Latch, Automatic Latch, Wing Nut Latch—all permit replacement of glassware in the field. V-Band holder shown, above, consists of a band which encircles tapered flanges of glassware and reflector. Seal is moisture and dust-proof; no gasket necessary.

6. Easy Servicing

To re-lamp, release coil spring toggle latches, lift reflector off hood and allow it to hang by chain. To replace glassware, simply loosen band; slip out old glassware; slip in new.

One of the factors which makes the L-M Spherolite a wise investment for any street lighting job is its flexible, weather-tight construction. Here are a few of its advantages:

- Versatility—the luminaire is adaptable to all mounting requirements—pendent or side mounting. It is supplied in a complete range of metal hoods for all methods of wiring including vertical and horizontal inner wired types with heat barriers.
- Interchangeability—a wide assortment of glassware, glassware holders, and deflectors may be easily interchanged to suit any installation requirement.
- Economy—Spherolite rarely requires servicing. It is tightly sealed against moisture, dirt and insects. Maintenance costs are negligible.

Closeups at left show a few of the principal features of the L-M Spherolite. For details write for the new Spherolite bulletin, No. 46012.

WRITE FOR NEW BULLETIN

Just off the press—this valuable, illustrated booklet — complete details on Spherolites, control equipment, recommended lighting practices. Line Material Company, Milwaukee 1, Wisconsin.

LINE MATERIAL
STREET LIGHTING EQUIPMENT

L-M DISTRIBUTION EQUIPMENT INCLUDES: Distribution Transformers • Fuse Cutouts and Fuse Links • Lightning Arresters • Oil Switches • Pole Line Hardware • Line Construction Specialties • Underground Equipment • Fibre Conduit • Street and Airport Lighting Equipment • Wired Radio Control Equipment • Capacitors

to protect the socket from the arc which may take place within the lamp. Unless quenched by proper protection, an arc thus created may travel up to the socket, welding socket and lamp base together and perhaps even destroying the socket.

In many cases, because of the high open-circuit voltage of the series circuit, welds in the filament are likely to occur at the point of failure. Such welds have been known to occur many times, with the result that the lamp may not actually fail; the effective filament length is so short, however, that in extreme instances the light output is reduced to perhaps a quarter or less of the initial value. Such lamps are known as "slumpers" and can be detected by their reduced light and reddish color in comparison with other neighboring lamps on the circuit. Group replacement has increased steadily as a means of eliminating "slumpers."

National Standards for Street Lighting Equipment

LISTED below are the various national standards applying to street lighting equipment. The publication code number and date are included in most cases.

Transformers.

AMERICAN STANDARDS ASSOCIATION—*Transformers, Regulators and Reactors (Including Test Code and Guide for Operation).* Now being revised. C 57-1942.

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION — *Transformer Standards.* Publication No. 42-73.

Transformers, Instructions for Care and Operation of. Sixth Edition. Publication No. 37-46.

Cable for Street Lighting Circuits.

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION — *Rubber Insulated Parkway Cables.* Second Edition. Aug. 1936. Now being revised.

Rubber Insulated Power Cables. Edition of May 1935. Now being revised.

Street Lighting Wire and Cable for Thermo-Plastic Synthetic Insulation. Approved Standards Bulletin RUS, page 59, January 6, 1943.

Street Lighting Equipment, Including Luminaires, Sockets and Receptacles.

Joint EEI-NEMA report now in preparation.

Metal Standards.

AMERICAN STANDARDS ASSOCIATION—*Tubular Steel Poles for Electric Line Construction, Specifications for.* C 13. 1926.

Wood Poles.

AMERICAN STANDARDS ASSOCIATION—*Northern White Cedar Poles, Specifications and Dimensions for.* O 5.1. 1941.

Western Red Cedar Poles, Specifications and Dimensions for. O 5.2. 1941.

Chestnut Poles, Specifications and Dimensions for. O 5.3. 1941.

Southern Pine Poles, Specifications and Dimension for. O 5.4. 1941.

Douglas Fir Poles, Specifications and Dimensions for. O 5.6. 1941.

EDISON ELECTRIC INSTITUTE—*Joint Pole Practices for Supply and Communication Circuits.* EEI-Bell Telephone Co. 1945. Publication No. M12. Oct. 1945.

Safety Rules.

AMERICAN STANDARDS ASSOCIATION—*Safety Rules for the Installation and Maintenance of Electrical Supply Stations.* C 2.1. 1941.

Safety Rules for the Installation and Maintenance of Electric Supply and Communication Lines. C 2.2. 1941.

Safety Rules for the Installation and Maintenance of Electric Utilization Equipment. C 2.3. 1941.

Miscellaneous References.

EDISON ELECTRIC INSTITUTE. Committee Report — *Series versus Multiple Street Lighting.*

ILLUMINATING ENGINEERING SOCIETY—*Recommended Practice of Street and Highway Lighting* 1945. 1946.

Addresses of the three organizations follow:

American Standards Association
70 East 45 St.
New York 17, N. Y.

National Electrical Manufacturers Association
155 East 44 St.
New York 17, N. Y.

Edison Electric Institute
420 Lexington Ave.
New York 17, N. Y.

Littlefield, Texas, to

Dress Up Main Street

By J. M. COLLINS
Division Manager
Southwestern Public Service Company

A SURVEY of our territory has revealed that communities which need modern street lighting for their business districts also require other improvements to obtain a completely modern appearance of the main business street. The progressiveness of the business men of Littlefield, Texas has insured the success of the initial application of a new sales program undertaken by our company.

The manager of our Littlefield office prepared a detailed modernization program. An artist portrayed the street as it would look with modern store fronts and street lighting system. A large colored map of the city, divided into sections; drawings of model street lighting fixtures which would furnish Littlefield with illumination in accordance with the IES Code, and large colored drawings of the individual stores on the street were also prepared.

The merchants on Main Street were enthusiastic when the complete portfolio was presented. In fact, everyone in the community has shown a sincere interest. All parts of the plan are now on display in the utility's business office and are attracting a great deal of attention.

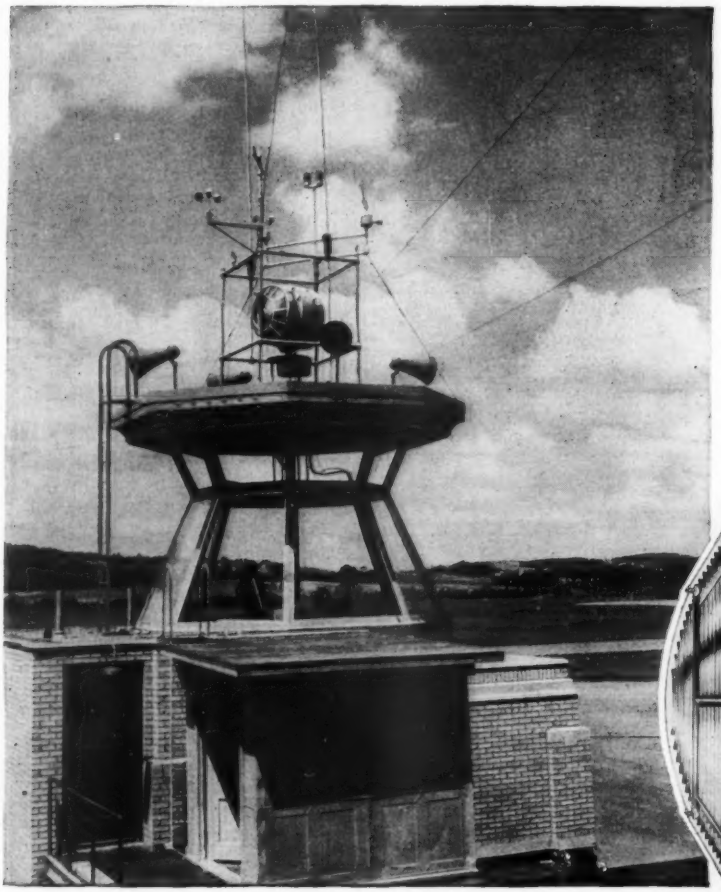
The local press is wholeheartedly behind the new program. It published the artist's drawing on the front page in a five-column layout and commented: "Cities and thriving towns just don't happen, they're built."

The immediate success of the plan for Littlefield's face-lifting has led us to prepare similar programs for other cities throughout our territory. As a "test case" in advanced thinking on municipal modernization, Littlefield's example could be followed to advantage in the smaller municipalities throughout the country.

Main Street now (above) and its proposed dress-up (right), centering around modern street lighting.

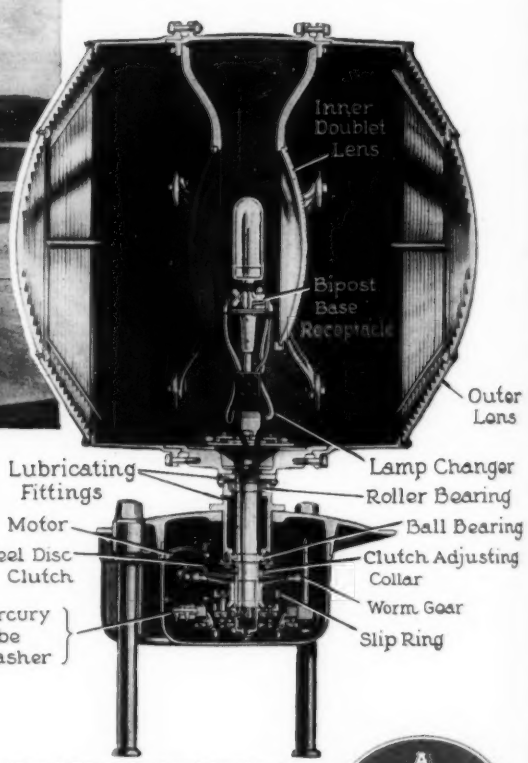
CROUSE-HINDS

Standard 36-inch Airport Beacon



with the time tested and proven rotating mechanism

It is identical with the rotating mechanism that has had years of continuous service on thousands of 36-inch and 24-inch airway beacons all over the world.



Type DCB-36. Sectional view showing the inner doublet lens that projects a white beam and a green beam — positively identifying the location as an airport when the beacon is rotated at 6 R.P.M..

Crouse-Hinds Type DCB-36 Rotating Airport Beacon is the same reliable standard beacon that has been in general use on airways for many years. It is identical in construction and the parts are interchangeable.

It projects powerful beams of light in two directions, 180 degrees apart and meets the Civil Aeronautics Administration specifications for airport beacons, when equipped with one end clear and one end green, and rotating at 6 R.P.M.

Type DCB-36 rotating beacon can be furnished for other purposes and arranged for 1, 3, or 12 R.P.M. It can be furnished with one end clear and one end yellow for a marine airport; with one end clear and one end red for use as a landmark beacon; with both ends red for use as a hazard beacon. A code flashing mechanism can also be furnished.

Crouse-Hinds complete line of lighting and control equipment will meet the requirements of your airport, whether it is a small field for private flying or a huge commercial air terminal.

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ZONING and PLANNING NOTES

Edited by
NORMAN WILLIAMS, JR.
with the assistance of
FRANK B. WILLIAMS
and
EDWARD M. BASSETT

Night Football Not a Nuisance —High School Facilities in Residential Zone

KENTUCKY.—*Board of Education of Louisville* v. *Klein*, 197 South Western (2d) 427 (Kentucky Court of Appeals, November 8, 1946).

A Louisville high school was making preparations during the summer of 1946 to install lighting for night football, to be held about two nights a week for six weeks during the fall. About 300 neighboring landowners sought and obtained an injunction against this as a nuisance; but in November, right at the end of the season, the Kentucky Court of Appeals reversed the lower court and dissolved the injunction.

The Court held that football games, like baseball, did not constitute a nuisance per se, even when held at night and near residences. Moreover, the Louisville zoning ordinance's provision allowing high schools in a residential area was interpreted to permit also any part of a high school, including classroom buildings, a library, gymnasium, or athletic stadium. While night football games might become a nuisance under certain circumstances, this could not be ascertained in advance of the first game, and the suit was therefore dismissed as premature. When land use is regulated on a theory of nuisance, it can operate only through the method proposed here, by wasteful retroactive prohibitions.

Lake-Side Park Project in Seattle

WASHINGTON.—*Batchelor* v. *Madison Park Corporation*, 172 Pacific (2d) 268 (Washington Supreme Court, August 30, 1946).

Pursuant to an elaborate procedure prescribed in a 1939 Washington statute, the City of Seattle promptly applied for and obtained conveyance of the use of state-owned shore land along Lake Washington, close to downtown Seattle. The deed from State to City required that the land should be used for park and playground purposes, and provided for a reversion if it was put to other uses, or if the project was not started in one year. The City government took some preliminary steps for cleaning up and planning the proposed park; it was intended that one should be left as open space, and the other developed as a children's playground. However, five months later the grant was challenged by adjoining land owners on several grounds: that it was unconstitutional, that it was creating a nuisance, that the land was not suitable for a park, and the project was really planned to favor the Madison Park Corporation, which owned some apartments nearby. After institution of the suit, the City's activity lapsed considerably. The next several years saw intermittent interpleading and cross-complaints by a variety of parties. The State Land Commissioner sought a forfeiture on the ground that the City had not really set to work on the park within one year as provided, and other adjoining landowners also joined as plaintiffs. Eventually, in 1944, the lower court decided to enforce the reversion on the ground of non-user. To complete the confusion, shortly thereafter the Legislature passed another act confirming the City of Seattle's rights in the property.

The Washington Supreme Court, admittedly nearly stumped by "this wilderness of pleadings," elected to ignore the City's plea that the new statute made the question moot and decided the appeal on the merits. The requirement in the original grant that the City take action within one year was held without statutory authorization and so void. Second, private parties were denied standing to sue in order to enforce a forfeiture under these conditions. Most important, the Court held that the City had in fact continued to hold and use the land for a park and playground, and it emphasized in particular that a park may well consist of mere open space and need not be formally laid out or improved. The statute and the grant were also held to convey to the City merely the use of the land, rather than the title, and this was held to forestall any constitutional questions.

Variances—Detailed Statement of Facts

MARYLAND.—*Heath* v. *Mayor and City Council of Baltimore*, 49 Atlantic (2d) 799 (Maryland Court of Appeals, November 22, 1946).

In *People* ex rel. *Fordham Manor Reform Church* v. *Walsh*, 244 N. Y. 280 (1927), where the facts from which unnecessary hardship was inferred were omitted from the record and the pleading, the Court lectured the New York Board of Appeals on the necessity of stating such facts in detail, and this advice has been widely followed. Since the usual standard of "unnecessary hardship" was declared too vague in Maryland, the ordinance provisions for variances have been amended to require that the proposed building must not involve any dangers of fire or disease, nor any dangers to public health, morals, and security. Yet, the Baltimore Board of Zoning Appeals recently granted a permit for a garage, with the mere statement that it had "made a study of the premises and neighborhood." The variance was refused on appeal, on the ground that the facts must be spelled out in detail to permit review.

Zoning Variances May Relax But Not Strengthen Regulations

MICHIGAN.—*Teglund* v. *Dodge*, 25 North Western (2d) 161 (Michigan Supreme Court, December 2, 1946).

A conforming four-story multiple dwelling was proposed for an area zoned for that type of building. However, the neighbors, who lived largely in one-family houses, objected to its construction as unsightly, and sought to enjoin the building on the ground that in these circumstances its construction would bring unnecessary hardship to them. Under their theory, the Board of Appeals' power to vary the application of zoning regulations by granting exceptions authorized the Board to take action against practical difficulties and unnecessary hardships in either of two ways, by allowing non-conforming uses or by making more severe restrictions. The Court, however, took a basically different view, and construed the phrase permitting variances for hardships arising "in complying with the provisions of this ordinance" as referring only to restrictive provisions. Under the theory of zoning here adopted, the zoning ordinance served only to restrict in certain specific ways the previously existing legal rights; the right to build conforming buildings would then proceed not from permissive provisions of the zoning ordinance, but from a "legal right" to build, derived from previous and not superseded law — or, perhaps, from some theory of natural law. The power to vary may therefore be exercised to permit non-conforming buildings, when practical difficulties or unnecessary hardships appear as a result of restrictive provisions of the zoning ordinance, but does not include the power to impose more severe restrictions to prevent other hardships.

Residential Covenants— Medical Practice at Home

TEXAS.—*Briggs* v. *Hendricks*, 197 South Western (2d) 511 (Texas Court of Civil Appeals, Galveston, November 14, 1946).

Restrictive covenants limited land in the "Houston Country Club Place Addition" to residential use, except in a business center where one doctor's office was to be allowed. An elderly and semi-retired physician living in the area set aside one room in his home as his office, continued occasional practice there as a specialist in rectal diseases, and put a sign on the door to that effect. In this action to enjoin such use, the Court held that residential covenant restrictions are intended to exclude commercial activities, involving noise, bustle, and other offensive characteristics —but not to forbid practice of the learned professions.

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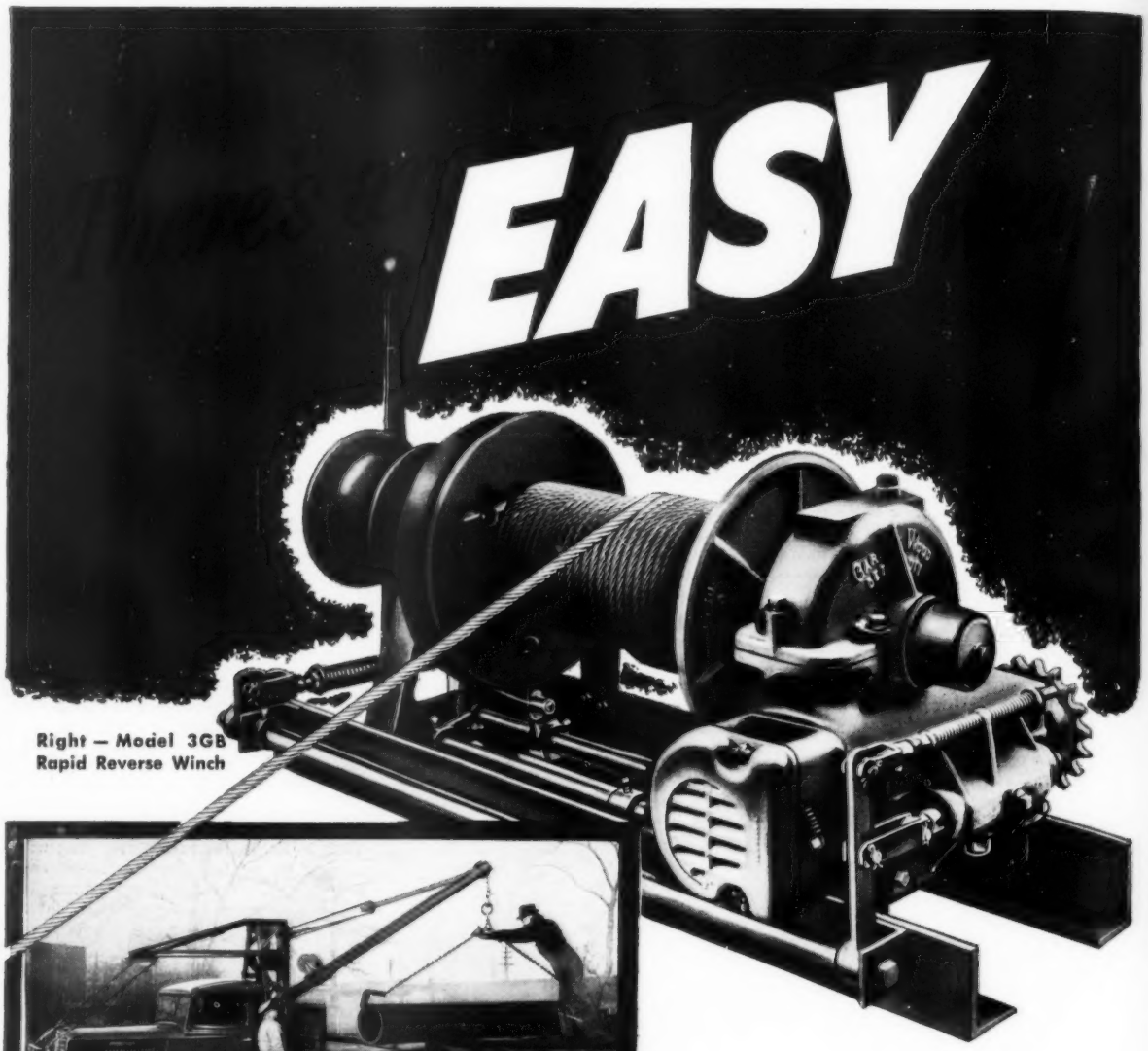

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Recent City Manager Appointments

The following portraits are of city managers whose appointments have been announced in preceding issues of The American City

W. C. Drager
Williamsburg, Va.

J. L. Franzen
Salem, Ore.

Boyd J. McDaniel
Abilene, Tex.

William J. Deegan, Jr.
Superior, Wis.

W. B. Collier
Houston, Tex.

Bernard Joseph Noden
Mars Hill, Maine

James G. Wallace
Fargo, N. D.

Bill Richards
Phoenix, Ariz.

Elston Lotz
Brunswick, Ga.

G. O. Summers
Waxahachie, Tex.

Ten Mayors Visit Ten Cities

A UNIQUE tour by air of ten large cities by a special committee of the United States Conference of Mayors is under way as this issue of THE AMERICAN CITY goes to press. Starting March 5, a delegation of ten mayors, headed by Mayors George W. Welsh of Grand Rapids, president of the Conference, and W. Cooper Green of Birmingham, vice-president, are visiting Grand Rapids, Des Moines, Kansas City, St. Louis, New Orleans, Birmingham, Memphis, Louisville, Indianapolis, and Cincinnati, for discussion of municipal problems with officials of those cities.

The other eight mayors participating in the trip are: Vincent J. Murphy of Newark, N. J.; Horace H. Edwards of Richmond, Va.; William E. Kemp of Kansas City, Mo.; John S. Monagan of Waterbury, Conn.; Charles W. Leeman of Omaha, Neb.; Stanley W. Church of New Rochelle, N. Y.; John J. Burns of Burlington, Vt.; and Harry J. Baals of Fort Wayne, Ind. The delegation is accompanied by Col. Paul V. Betters, executive director of the United States Conference of Mayors, W. A. Hook, deputy administrator of the Civil Aeronautics Administration, and newspaper correspondents.

If this experiment is as successful as anticipated, it will be followed by three other similar trips this spring.

The Municipal Bond Market

Some sales of new issues reported in recent issues of *The Bond Buyer*:

Amount	Borrower and Purpose	Rate (%)	Term (Years)	Basis (%)
$ 100,000	Phoenix, Ariz., Municipal Airport and Improvement of 1946	1	1-4 Ser.	2.1648
80,000	Marysville, Mich., Storm and Sanitary Sewer	1	1-3 Ser.	1.077
134,000	Lynbrook, N. Y., General Improvement	1.10	4.25 Avg.	1.068
10,000	Port Henry, N. Y., Highway Construction, Maintenance and Snow Removal	1.25	2.50 Avg.	1.18
1,750,000	York, Pa., Sch. Dist.	1.25	12.33 Avg.	1.186
107,700	Arkansas City, Kans., Water Works	1.25	5.33 Avg.	1.115
45,000	Aliquippa, Pa., Funding	1.25	2-10 Ser.	1.226
100,000	Canton, S. D., Sewage Disposal System	1.40	1-10 Ser.	1.36
245,000	Home Water Dist., Ore., Water	1.50	9.25 Avg.	1.72
155,000	Nashville, Tenn., Water Works of 1945	1.50	20.75 Avg.	1.5489
3,500	Montgomery Tp., Ind., Community Building	1.75	2-11 Ser.	1.63
150,000	Bartow, Fla., Electric Power Revenue Certificates	1.75	5.50 Avg.	1.447
250,000	Westerville, Ohio, Sch. Dist.	1.75	13 Avg.	1.59
300,000	Logan, Utah, Electric Light and Power Revenue	2	1-10 Ser.	1.434
120,000	Tracy, Cal., Water and Sewer	2	1-12 Ser.	2.316
10,000	Roanoke Rapids, N. C., Cemetery	2.50	3-7 Ser.	2.046
35,000	Myrtle Beach, S. C., Sewerage	2.75	3.3¾ O.-A.	3.193
50,000	Willowick, Ohio, Village Hall	3.25	13.83 Avg.	3.197

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		Charge	Hours
6-Nickel	— 90 minutes for each Nickel	30c	9
1-N 1-Q	— 1 hour for ONE Nickel and 5 hours for ONE Quarter	30c	6
5-N 1-Q	— 60 minutes for each Nickel OR 5 hours for 1 Quarter	25c	5
5-N 1-Q	— 72 minutes for each Nickel OR 6 hours for 1 Quarter	25c	6
1-Quarter	— 6 hours for 1 Quarter	25c	6
2-Quarter	— 4½ hours for each Quarter	50c	9
3-Quarter	— 3 hours for each Quarter	75c	9

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LEGAL NOTES *and* DECISIONS

Prepared by

NATIONAL INSTITUTE *of* MUNICIPAL LAW OFFICERS

CHARLES S. RHYNE
General Counsel

Airports—Located Outside City—Taxation Exemption

In proceeding by County Collector for sale of airport belonging to city for delinquent taxes, held that airport owned by city situated outside of city limits, the use of which was open to the public generally and not limited to use by citizens of city, was being used "exclusively for public purposes" and was exempt from taxation by town and school district. *People ex rel. Lawless* v. *City of Quincy*, 69 N. E. (2d) 892 (Ill., Nov. 20, 1946).

Amusement Devices—Absence of Chance Element—Gambling

In action against Commissioner of Licenses of City of New York, held that the game of "bank ball" which is an alley - roll game and which has no element of chance built into machine either to control speed or direction of ball, is a game of skill and amusement and is not a "gambling device" and is not within statute penalizing keeping of slot machine gambling devices. *Amusement Enterprises, Inc.* v. *Fielding*, 64, N. Y. S. (2d) 857 (N. Y. Sup. Ct., Kings Co., July 26, 1946).

Bonds—Interest Coupons Attached—Statute of Limitations

Interest coupons, payable to bearer, when detached from municipal bonds, became separate obligations due and payable on dates specified in coupons, and actions to recover on coupons not commenced within ten years after such dates were barred by ten-year statute of limitations, regardless of maturity date of bonds. *Jennings* v. *Morehead City*, 39 S.E. (2d) 610 (N. C., Oct. 16, 1946).

Charitable Institutions—Bequest to City—Purpose of Testatrix

Where testatrix directed that money be used by city for erection and maintenance of old people's home at reasonable rates, and for no other purposes, and amount of trust fund was inadequate to erect and maintain such home, and there was a home for elderly people, owned and operated by city, held that court of equity had authority under statute to change mode of effectuating bequest within general purpose of testatrix, by directing application of trust funds for maintenance of existing home, insofar as home's facilities were limited to the class described in the will. *Fairbanks* v. *City of Appleton*, 24 N.W. (2d) 893 (Wis., Nov. 26, 1946).

Contracts—Damages Caused by Delay in Completion

Where contract for construction of lighting equipment for airport runways contemplated that work was to commence as government completed construction of runways, but contract did not contain warranty on part of government to make runways promptly available, and work of constructing runways was performed with diligence but was delayed due to unforeseen causes, held that government could not be held liable to contractor for damages caused by delay in his completing contract. *United States* v. *Howard P. Foley Co.*, 67 Sup. Ct. 154 (U. S. Sup. Ct., Nov. 25, 1946).

Exclusion of Territory from City—Contiguity

In action for disconnection of land from village, held that agricultural land in village, only a corner of which touched corner of another village, was not "contiguous in whole or in part" to other village within statute and hence could be disconnected from first village by statutory procedure. *Wolbach* v. *Village of Flossmoor*, 69 N.E. (2d) 704 (Ill. App., Nov. 18, 1946).

Hospitals—State Acquisition of Municipal Unit—Competitive Bidding

In action to enjoin City of Cleveland from entering into certain relation with State of Ohio involving title, maintenance, and operation as a receiving hospital for mentally ill, which had been constructed and was owned and operated with funds derived from taxation by City primarily as a psycopathic unit of its municipal hospital, held that state had power to acquire municipal hospital as part of statewide system of receiving hospital without regard to competitive bidding provisions of municipal code and its acquisition was not for purpose different from original purpose. *Hickey* v. *Burke*, 69 N.E. (2d) 33 (Ohio App., Apr. 19, 1946).

Intoxicating Liquor—Measurement of Distance Between Places of Retail Sale

Where Alcoholic Beverage Control Law did not set forth standard by which State Liquor Authority was to measure the 1,500 foot distance required between similarly licensed stores for sale at retail of alcoholic beverages for off-premise consumption, held that the Authority properly continued to measure distance from center of entrance of each store as had been done under rule adopted by Authority requiring 1,500 foot distance between such doors pursuant to an interim Liquor Control Law vesting power in Authority to adopt rules including location of premises to be licensed. *Sarrel* v. *Telesford*, 65 N.Y.S. (2d) 403 (N.Y. Sup. Ct., N. Y. Co., Sept 12, 1946).

License Taxes—Interstate Commerce

In action to recover license tax paid under protest, held that city ordinance requiring manufacturer, as condition to grant of license, to pay license tax proportioned to amount of sales of manufactured goods whether sold within or without state, does not contravene commerce clause of federal constitution. *Ingalls Iron Works Co.* v. *City of Birmingham*, 27 So. (2d) 788 (Ala., Oct. 10, 1946). Reh. den. Nov. 21, 1946.

Notice of Claim—Service Upon Corporation Counsel

In action against city for personal injuries, held that service of notice upon corporation counsel alone was sufficient under 1945 General Municipal Law amendment, and hence service on comptroller, in addition, was unnecessary. *Ferrara* v. *City of New York*, 65 N. Y. S. (2d) 327 (N. Y. City Ct., Bronx Co., Oct. 3, 1946).

Ordinances—Construction of by Supreme Court—Absence of in Record

Where ordinance which relator attacked as not being applicable to one of his status was not made part of record, held that it was not before Supreme Court for construction, and, hence, no clear legal right to relief prayed was shown, and order dismissing alternative writ of mandamus was required to be affirmed. *State ex rel. Kay* v. *City of Miami*, 27 So. (2d) 413 (Fla., Oct. 11, 1946). Reh. den. Oct. 25, 1946.

Parking Meters—Installation on County—Claimed Land—Injunction

Where city proposed to install parking meters along strip of land over which county claimed ownership and which city used a part of street, held that county had no cause of action against city for injunctive relief against use of meters, since title to strip was involved, thereby making proper remedy an action in ejectment. *Turnbull* v. *City of Xenia*, 69 N. E. (2d) 378 (Ohio App., Oct. 25, 1946).

Pensions—Reduction of Fireman to Lower Position

In certiorari to review order of civil service commission of city denying petitioner a pension, held that city cannot reduce in rank a fireman who is entitled to a pension because of incapacitating injuries, give him a lower position which he can fill, and then supplement lower salary by amount sufficient to pay him his former salary and thereby deprive him of his pension. *Woodruff* v. *City of Nashville*, 197 S. W. (2d) 4 (Tenn. App., June 29, 1946).

Pinball Machines—Operation of Forbidden by Statute—Possession, by Ordinance

San Diego County ordinance making unlawful the possession of any pinball or marble machine or device as defined in ordinance was not held invalid on ground that it was duplication of statutes forbidding only the operation or use of such machines or devices. *Sternall* v. *Strand*, 172 Pac. (2d) 921 (Cal. App., Oct. 10, 1946).

Policemen—Discharge at Option of City

In mandamus proceeding to require defendants to show cause why their order discharging petitioners from service and placing them on pension payroll should not be expunged, held that amended statute authorized city, at its option on its own initiative or at request of individual member of police force, to honorably discharge members of police force who had served twenty-five years or more and to place them on pension roll at not exceeding half pay. *Ellsworth* v. *Municipal Owners of City of Portland; Powers* v. *Same*, 49 Atl. (2d) 169 (Maine, Oct. 2, 1946).

Sales Tax—State Levy as "Impost" on Exports

In action to recover retail sales tax paid under protest, held that the imposition of California retail sales tax upon receipts from sale of oil exported by foreign corporation authorized to do business in state to New Zealand Government constituted an "impost" on exports within meaning of prohibition contained in Federal Constitution. *Richfield Oil Corporation* v. *State Board of Equalization*, 67 Sup. Ct. 156 (U. S. Sup. Ct. November 25, 1946).

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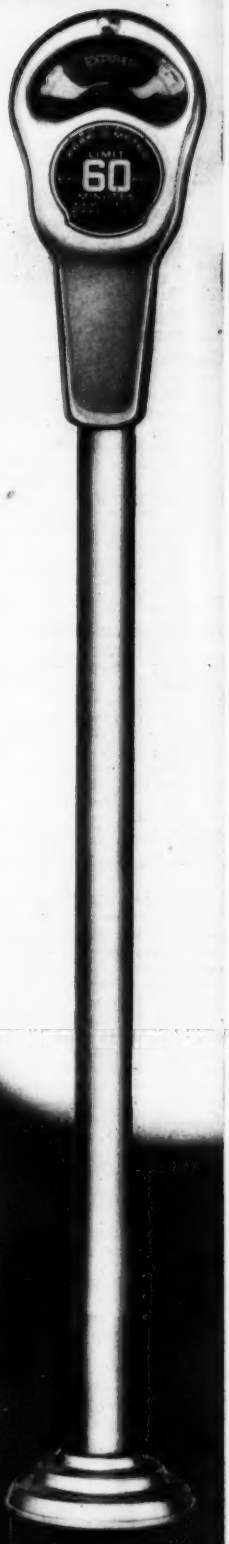

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New Publications

Municipal and Civic

Studying Your Community

YOUR COMMUNITY, ITS PROVISION FOR HEALTH, EDUCATION, SAFETY, WELFARE—*By Joanna C. Colcord. Russell Sage Foundation, 130 E. 22 St., New York 10, N. Y.* 1947. 263 *pp.* $1.50.

Revised for the third time since its original printing in 1939, *Your Community* remains a most valuable outline and guide for persons who wish to secure a rounded picture of their own community. The present volume focuses primarily upon the local community, which even in a day of world-shrinking miracles continues powerfully to affect health and social well being. It suggests the type of information that might be assembled and studied by intelligent citizens and citizens-to-be, for the purpose attacking the problem of supplying community lacks and improving existing services.

The book has been widely used for community surveys by civic organizations and school groups, and was the basis for a series of radio programs prepared by a college.

Each chapter is concerned with a different aspect of community life and describes the most recent happenings in the particular field, listing key questions and suggestions for digging out information.

Fires from Bombing

FIRE AND THE AIR WAR.—*A symposium of expert observations. National Fire Protection Association, 66 Batterymarch Street, Boston.* 1946. *Illustrated.* 15 *chapters.* 262 *pages.* $4.00.

The Allies' fire protection engineers who helped plan the destruction of enemy cities and industrial plants describe in this study the harvest of tragedy. Fortunately, they also outline the lessons which must be taken to heart and acted upon lest American cities join the rubble heaps of Europe and Japan. The principal lesson is "that we must keep the peace."

The book gives insight into the types of damage, physical and vital, of the bombing in different countries, and the strain of existence during the attacks. In Japan, 85 plane loads, or 550 tons of bombs, were required to wreck a square mile before the advent of the atom bomb; in Germany only 200 tons. The effects of atom bombing are described.

Health and Welfare Expenditures

EXPENDITURES FOR COMMUNITY HEALTH AND WELFARE. — *Community Chests & Councils, Inc., 155 E. 44 St., New York 17, N. Y.* 1946. 50 *pp.* $1.00.

This is a statistical study of total expenditures for health and welfare services in fourteen urban areas. The project, formerly conducted by the U. S. Children's Bureau, is now sponsored by Community Chests and Councils, Inc. The breakdown of the figures into significant groupings and charts should be of value to those interested in community planning and interpretation.

Planning Annual

PLANNING: 1946. — *Proceedings of the Annual Meeting held in New York City May 6-8, 1946. American Society of Planning Officials, 1313 E. 60 St., Chicago, Ill.* 1946. 199 *pp.* $3.00.

This volume consists of the addresses and reporters' summaries of the discussions that took place at the annual meeting of the American Society of Planning Officials.

Among the highlights of the annual conference was the session on urban redevelopment legislation, for which Catherine Bauer gave the introductory talk. Other timely topics of interest to local officials include reports of discussions on preparing the community to meet the housing emergency, the war's effect on communities, and public relations and citizen participation.

Municipal Finance

MUNICIPAL FINANCE ADMINISTRATION—*Published for the Institute for Training in Municipal Administration by The International City Managers' Association, 1313 E. 60 St., Chicago 37, Ill.* 1946. 427 *pp.*

This third edition of the volume provides a ready reference guide for the municipal administrator, as well as a text for the student of municipal finance administration.

Two chapters have been completely rewritten and most of the other chapters have undergone some revision. The chapter on municipal revenues has been revised to bring into account the changing trends in sources of revenue and revenue problems resulting from World War II, and the tailoring of revenue systems to the needs of individual cities. The chapter on treasury management has been rewritten in recognition of the improvements made in this phase of finance administration.

Among other subjects covered by this text are accounting and budgeting procedures, long-term financial planning and debt administration, purchasing and storing, financial reporting, and assessment administration.

Sewage Digesters

DORR DIGESTERS—SINGLE-STAGE AND MULTIDIGESTION.—*The Dorr Co., 570 Lexington Ave. New York 22, N. Y. Illust. Charts.* 57 *pp.*

The clever use of color, pictures, graphs and charts make this booklet attractive as well as readable. Not only are the various types of Dorr Digesters discussed, but also the history, theory, and practice of digesting sewage sludges under controlled chemical, physical, and thermal conditions.

One section is devoted exclusively to calculations of sizes, heat losses, and heating requirements with typical examples in each case. Operating data from two dozen plants are given in tabular form, plus a list of installations of various types in cities covering a broad range in population.

Metropolitan Planning in Canada

BACKGROUND FOR PLANNING GREATER WINNIPEG and MAJOR THOROFARES FOR GREATER WINNIPEG—*Two reports prepared jointly by the Metropolitan Planning Committee and Winnipeg Town Planning Commission, 605 Time Bldg., Winnipeg, Canada.* 1946.

These two excellent studies are the first in a series of reports to be published dealing with the future development of Winnipeg's metropolitan area. Within the group organized for the purpose of preparing a master plan for the Greater Winnipeg area are seven municipalities, one village, two towns and two cities.

Detroit Slum Clearance Plan

THE DETROIT PLAN—A PROGRAM FOR BLIGHT ELIMINATION.—*The Detroit Housing Commission, 409 Griswold Street, Detroit, Mich.* 1946. 17 *pp.*

By scheduling a test area for slum clearance and blight elimination, Detroit is proceeding on a plan for private enterprise housing which will be of great interest to other municipalities. The basis of the plan is that the city will take an initial loss on land acquisition and preparation and later recover that loss through increased tax revenues from the redeveloped site.

The program has been worked out without reliance on the potential benefits through the possible enactment of the Wagner-Ellender-Taft housing bill, which would virtually wipe out the need for this sort of municipal investment. It was felt, however, that Detroit must first prepare a plan for its own salvation and anticipate only to a secondary degree the aid which might come from a new federal program.

Securing Citizen Interest in Planning and Housing

YOUR CITY TOMORROW—*By Guy Greer. The Macmillan Co., 60 Fifth Ave., New York, N. Y.* 1947. 210 *pp.* $2.50.

One of the clearest and simplest explanations yet published of community planning and housing theory, schools of thought, major developments, and chief obstacles, this book represents a valuable contribution toward arousing citizen interest in these fields.

Although Mr. Greer presents an interesting brief review of town planning history, his main concern is with making present urban communities in the United States into what they can and ought to be. Provocative chapters deal with the new powers that local governments must have in order to grapple with local problems and the changes that are necessary in the fields of taxation and public expenditures. In each case he proposes specific action in line with the American tradition.

To secure citizen interest and understanding of planning and planning procedures, Mr. Greer recommends a prize contest as a spark-plug for getting the community organized for planning, along with modern educational and publicity techniques. He devotes one of his chapters to the boldest and most comprehensive program of metropolitan planning yet advanced: the first prize award for the Greater Boston Contest of 1944.

Parking Solutions

PARKING—*Eno Foundation, Saugatuck, Conn.* 1946. 119 *pp. Copies available upon request.*

Parking problems are discussed in detail in this book, and corrective measures are given that can be applied by organizations and individuals confronted with parking difficulties. In addition to discussing the urban situation, a chapter is devoted to parking regulations and their relation to rural roadways.

The publication is well illustrated and contains simple forms of field sheets for use in studying parking problems, as well as diagrams and layouts of parking areas.

Learning from German City Planning Experience

AMERICAN VERSUS GERMAN CITY PLANNING.—*By Martin Wagner. Article in the Journal of Land and Public Utility Economics, 121 South Pinckney Street, Madison, Wis. November* 1946. 17 *pp.* $1.50 *a copy.*

This is a provocative discussion and comparison of American and German planning practices. The articles makes it clear that German municipal government at an early date provided planners with tools for town development, from which American planners could learn a great deal.

The author suggests that planning can only be achieved by having city executive officers in charge of coordination and collaboration take the lead, and keep it, in carrying out long range planning projects. Plan-realization means team-work among all municipal departments, Mr. Wagner adds.

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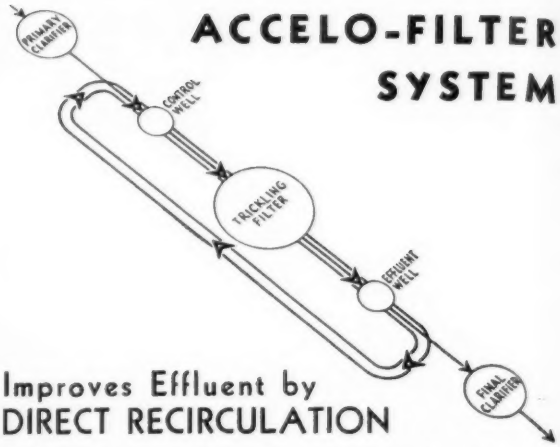

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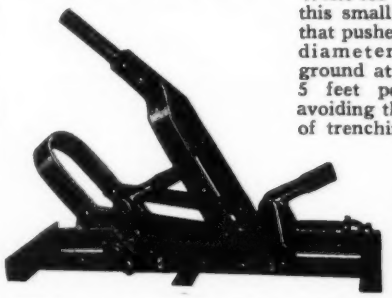

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Philadelphia Airport Program

AN AIRPORT PROGRAM FOR THE PHILADELPHIA-CAMDEN METROPOLITAN AREA—*Philadelphia City Planning Commission, Market St. National Bank Building, Philadelphia 7, Pa. 1946. Illus. Mimeo. 97 pp.*

This report, an excellent example of the cooperation of various governmental bodies within a metropolitan area spanning two states, outlines the general principles and requirements for a ten-year airport development program.

Legislation is recommended to permit governments in the area to pool their interests for the creation of a metropolitan airport authority for unified construction, operation, and regulation of aviation and airport activities.

Light and Ventilation Code

LIGHT AND VENTILATION—AMERICAN STANDARD BUILDING REQUIREMENTS, A53.1-1946.—*American Standards Association, 70 E. 45 St., New York 17, N. Y. 1946. 18 pp. 45 cents.*

The preparation of this code on light and ventilation requirements was sponsored by the National Housing Agency and the U. S. Public Health Service. The personnel of the committee that prepared it represents an imposing array of specialists and organizations.

Municipal officials considering building code revision should make every effort to secure a copy of this code and consider its carefully thought-out provisions.

Two Books on Surveying

SURVEYING THEORY AND PRACTICE—*by John Clayton Tracy, Professor Emeritus of Civil Engineering, Yale University. Published by John Wiley and Sons, Inc., 440 Fourth Ave., New York 16, N. Y. 1279 pp., Illus. $7.50.*

More thorough than the standard texts on surveying, this book gives the basic fundamentals for an art that the author admits can be learned only through practice. The book is conveniently arranged for ready reference; it carefully analyzes and gives the relation between field and office work, and it includes chapters on such up-to-date subjects as aerial photography as well as all other methods of survey..

HIGHER SURVEYING, VOL. II.—*by Charles B. Breed and the late George L. Hosmer, John Wiley and Sons, Inc., 440 Fourth Ave., New York 16, N. Y. 667 pp. Illust. Tables. $4.50*

This sixth edition gives the engineer an up-to-date handbook specializing in advanced surveying techniques and supplements *Elementary Surveying* by the same authors. Particularly thorough are the sections devoted to photogrammetric surveying. The chapters on triangulation and astronomy give recent data on good practice in those subjects. Tables and mapping specifications at the end of the book will be helpful to the engineer in establishing mapping standards.

Plan for Small Borough

A MASTER PLAN FOR THE BOROUGH OF VERONA, N. J.—*Prepared under the direction of the Planning Board by Harold M. Lewis, Consulting Engineer, New York, N. Y. 1946. 30 pp.*

Outlining proposals for the future growth and development of Verona, N. J., this report serves as a good example of a master plan for a small community. As Verona is a suburban borough, the report places emphasis on its recommendations for automotive and other transportation facilities. It also stresses provision of a civic center and small parks and playgrounds.

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Books of Timely Interest on Architecture and City Planning

HOSPITALS

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This is the first volume in Reinhold Publishing Corporation's Progressive Architecture Library series. Based on a lecture series given at the Architectural League of New York under the auspices of the New York Chapter of the American Institute of Architects and the Department of Public Works, New York, the book comprehensively and authoritatively covers all phases of hospital design, construction, costs and equipment. The above material has been greatly augmented and includes discussions by Doctors Roberts, Tarran and Blum. There are also chapters by Thomas H. Creighton and A. Gordon Lorimer. This volume will be of unquestionable value to architects, engineers, designers, draftsmen, hospital administrators, municipal boards of health and public works, and members of the medical and nursing professions.

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HOUSING AND CITIZENSHIP

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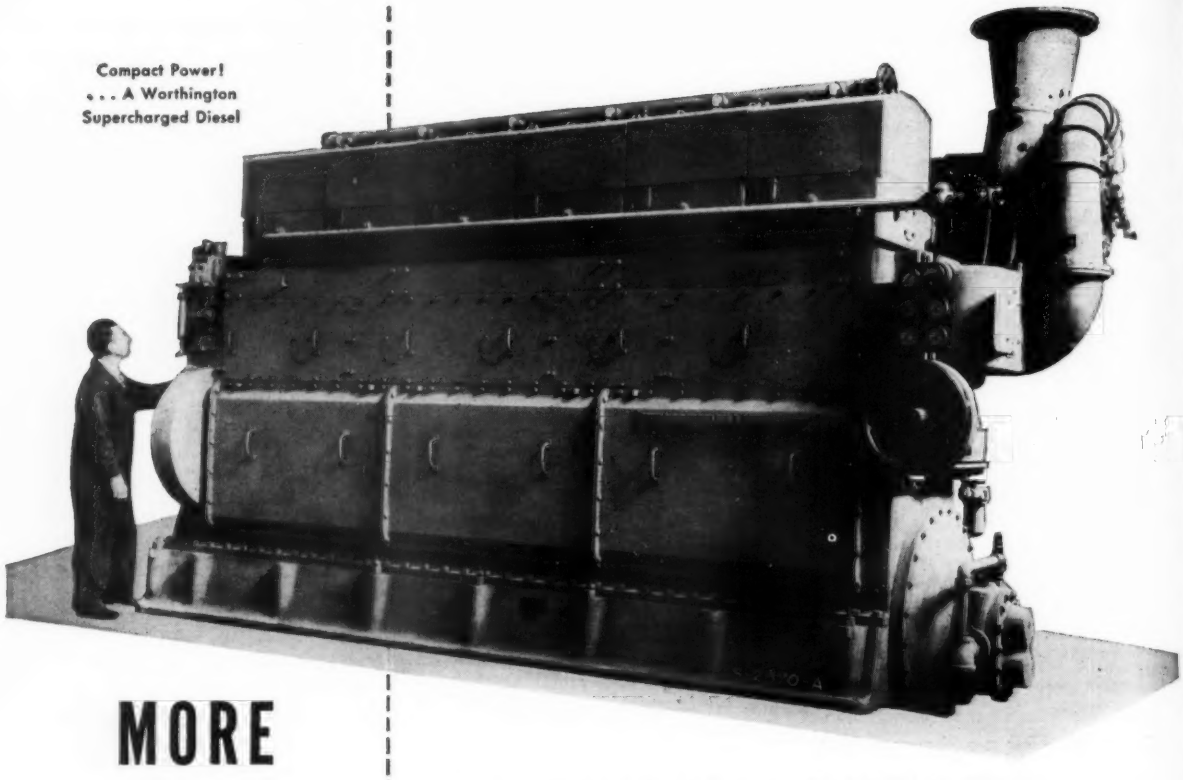

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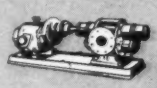

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Sociology and Land Usage

LAND USE IN CENTRAL BOSTON—*Walter Firey. Harvard University Press, Cambridge 38, Mass.* 1947. 367 *pp.* $5.00.

The author's contention in this book is that the economic use of land in American cities is based upon distinct and unique cultural patterns. By analyzing the history of Boston's growth, Mr. Firey shows that land use is not necessarily a rational development, but is influenced significantly by volition, tradition, and arbitrary planning.

In planning or replanning a city area, a very real account must be taken of existing historic and symbolic sites, even though they seem to contribute little to the life of the community, says the author. "Sentiment is one of the surest community-building forces that any city can have," he states, adding that it can win the interest and support of the people in civic improvements.

In conclusion, Mr. Firey discusses practical sociological considerations which must be considered in city planning.

Planning Community Action

COMMUNITY PLANNING FOR PEACETIME LIVING—*Edited by Louis Wirth, Ernest R. Hilgard, and I. James Quillen. Report of the* 1945 *Stanford Workshop on Community Leadership. Stanford University Press, Stanford University, Calif.* 1946. 177 *pp.* $1.50.

The Workshop on Community Leadership, conducted at Stanford University in 1945, was instituted to help volunteer lay leaders to prepare themselves to meet their responsibilities for community service and to consult together concerning policies of work and plans of action for their local communities. This book summarizes the proceedings in a well-organized form.

Part I, entitled "A Sociologist Looks at the Community," consists of transcripts of lectures presented by Professor Louis Wirth of the University of Chicago. Part II is composed of talks by California leaders on various community problems. Special interest groups report their discussions and findings in Part III, and Part IV contains the conclusions of the workshop in an analysis by Professor Wirth, entitled, "How To Get Things Done."

Organization of Traffic Agencies

THE ORGANIZATION OF OFFICIAL TRAFFIC AGENCIES IN CITIES AND STATES—*The Eno Foundation for Highway Traffic Control, Inc. Saugatuck, Conn.* 1946. 100 *pp.*

This report tells the results of a national survey which obtained information from highway and police organizations of all states, as well as from the traffic engineering and police departments of cities with population of 50,000 or more.

The report contains information about names of traffic divisions; titles of traffic heads; persons to whom traffic heads report; methods of appointing traffic heads; salaries of heads of traffic activities in relation to salaries of other governmental department heads; traffic functions, and miscellaneous factors such as the ratio of police to population and traffic training.

Planning and Housing Reports

ALBANY, N. Y.—Subdivision Control, A Step Toward Better Communities. A Manual of Subdivision Regulation for Municipal Officials, Subdivision Developers, Builders and Planning Boards. Bureau of Planning, New York State Department of Commerce, 112 State St. 1947. 35 pp.

BERGEN COUNTY, N. J.—Annual Report of Progress, 1946. County Planning Board, Hackensack, N. J. Mimeo. 15 pp.

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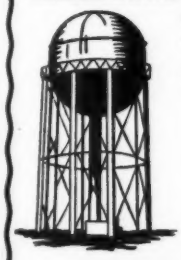

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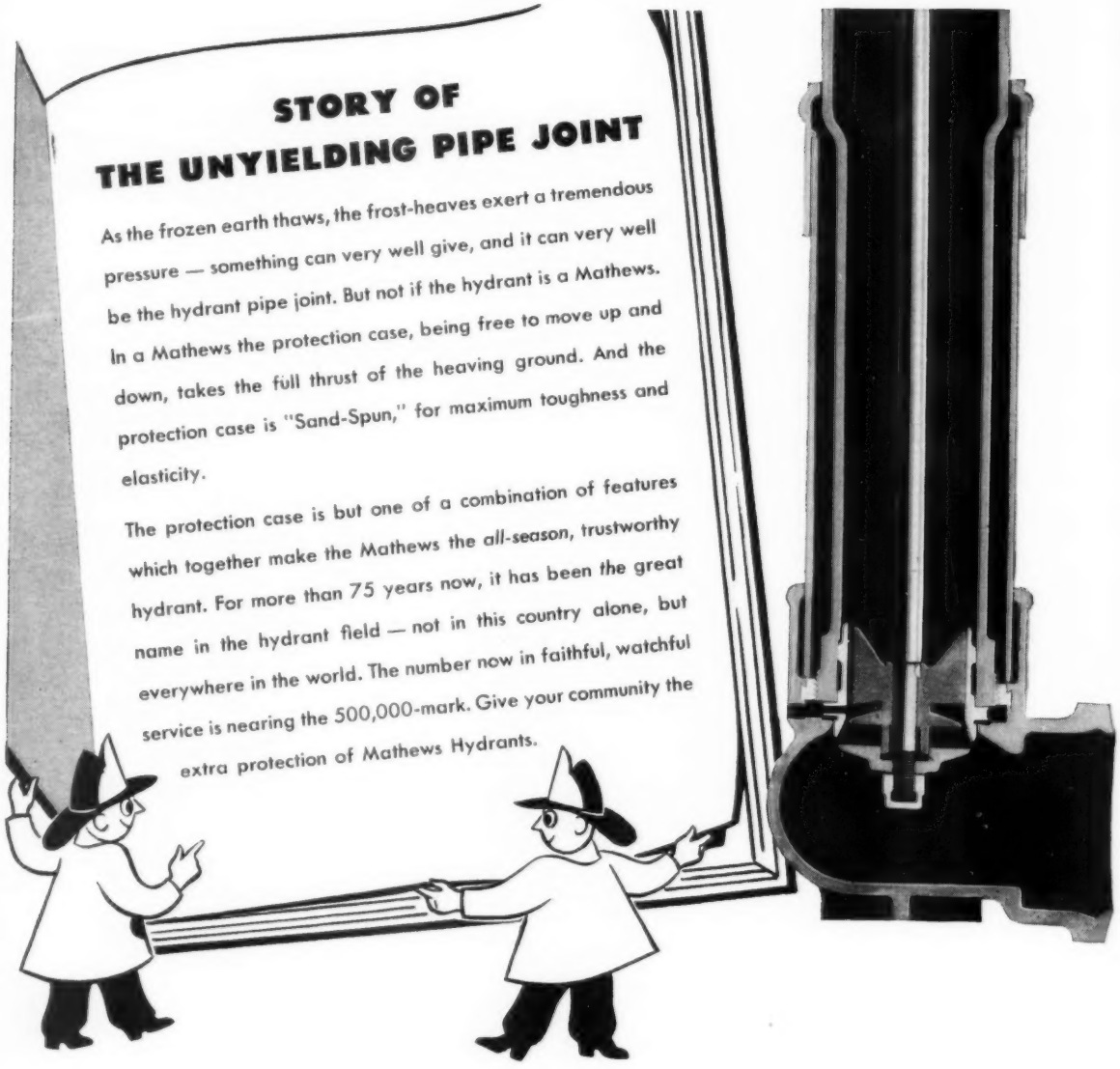

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BROOKLINE, MASS.—Annual Report on Long-Range Planning. Brookline Planning Board, William Stanley Parker, Consultant. 1946. 24 pp.

BRAINERD, MINN.—City Plan for Brainerd, Minn. By S. R. DeBoer & Co., City Planning Consultants, 515 Iliff Ave., Denver, Colo. 1946. Mimeo. 100 pp. Charts.

CHICAGO, ILL.—Housing Goals for Chicago. The Chicago Plan Commission, 20 N. Wacker Drive. Copies available from Municipal Reference Library, Room 1005, City Hall. 1946. 236 pp. $1.50.

EAST ORANGE, N. J.—Schools and Recreation. Fifth of a Series of Reports by the City Planning Board, 2800 Raymond-Commerce Bldg. 1947. 123 pp.

HALIFAX, NOVA SCOTIA—The Master Plan for the City of Halifax. Prepared by the Civic Planning Commission. 1946. 143 pp.

LOS ANGELES, CALIF.—Annual Report, The Regional Planning Commission, 1945-1946. County of Los Angeles, Room 625, 205 South Broadway. 1947. Mimeo. 21 pp.

NASHVILLE, TENN.—Tennessee Is Making Plans. A Progress Report of the Tennessee State Planning Commission. 432 Sixth Ave. 1947. 15 pp.

NEWPORT NEWS, VA.—Annual Report; Study and Recommendations of the Lower Peninsula Planning Commission of Virginia. 4500-R Washington Ave. 1946. 54 pp.

SALEM, ORE.—A Long-Range Plan for Salem, Oregon. First Annual Progress Report, Long-Range Planning Commission, Chamber of Commerce, 147 N. Liberty St. 1947. 84 pp.

SAN FRANCISCO, CALIF.—Down Through the Years. Eighth Annual Report of the Housing Authority of the City and County of San Francisco. 1947. 32 pp.

TOLEDO, OHIO—Preliminary Sketch for a Master Plan of the City of Toledo and the Metropolitan Area. The Metropolitan Planning Committee of the Toledo Chamber of Commerce. 1947.
—Planning Highlights—Toledo-Lucas County Plan Commissions. 1947. 38 pp.

Other Reports Received

ALBANY, N. Y.—A Guide To State Service—New York State Department of Commerce, 112 State St. 1946. 139 pp.

ANN ARBOR, MICH.—Reorganization of Michigan's County Government. By Robert S. Ford and Claude R. Tharp. University of Michigan Press. 1946. 24 pp. 10 cents.

BOSTON, MASS.—Comparative Status of 43 Cities and Towns in the Boston Metropolitan Commission Districts. Bureau for Research in Municipal Government. Harvard Graduate School of Public Administration. 1947. Graphs. 69 pp. $1.25.

CHARLESTON, W. VA.—Controlling Large Scale Tank Fires. By James J. Duggan. Carbide and Carbon Chemical Corp. Mimeo. 1946. 4 pp.

Combined with: A Report on the Full Scale Tests of the Subsurface Injection Method of Tank Fire Extinguishment. By Richard L. Tuve, Office of Research and Invention, Naval Research Laboratory, U. S. Naval Department, Washington, D. C. Mimeo. Illust. 16 pp.

HOUSTON, TEXAS—Is Zoning Fair?—A Report by the Zoning Committee of the Houston Chamber of Commerce. 1946. Mimeo, 16 pp.

NASHVILLE, TENN.—Toll Bridges In Tennessee. Tennessee State Planning Commission. 432 Sixth Ave. 1947. 8 pp.
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State Retirement Systems for Public Employes. Tennessee State Planning Commission. 432 Sixth Ave. North. 1947. 17 pp.

NEW YORK, N. Y.—Summary of Proposal for The Development of New York City Airports. The Port of New York Authority, 111 Eighth Ave. at 15 St. 1946. Mimeo. Illus. 44 pp.

Output and Productivity in the Electric and Gas Utilities, 1899-1942. By Jacob Martin Gould. National Bureau of Economic Research, Inc. 1819 Broadway. 1946. 195 pp. $3.00.

Tax Policy, Tax Institute, 150 Nassau St. 10 pp. 25 cents.

TEXAS—Texas Board of Water Engineers' Progress Report. 1946. Charts. 91 pp.

WASHINGTON, D. C.—Report on War Memorials. National Commission of Fine Arts. Superintendent of Documents, Government Printing Office, 16 pp. Illus. 1947. 15 cents.
Summary of City Government Finances in 1945. City Finances: 1945. U. S. Department of Commerce. Mimeo. 11 pp.

Summary of State Government Finances in 1945. State Finances: 1945. U. S. Department of Commerce. Mimeo. 12 pp.

The Potomac River Valley. An Object Lesson for Development by Interstate Co-operation, by James Birchfield. Reprinted from The Evening Star. Interstate Commission on the Potomac River Basin. 520 Transportation Bldg. 12 pp.

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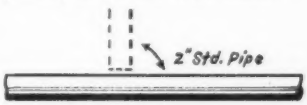

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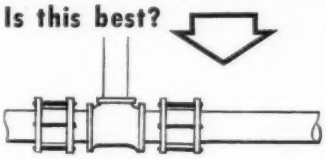

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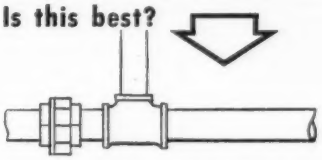

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ADVANTAGES

1. No threading of pipe in the trench.

2. Uses fewer fittings than other usable methods; just how much is really dispensed with can be gained from reading the two other possible solutions to this problem shown above.

3. Saves a very sizeable amount of labor on every such installation.

Stocks in Principal Cities; write for name of your nearest Distributor.

SMITH BLAIR INC.

SOUTH SAN FRANCISCO • CALIFORNIA

ALSO BRONZE SERVICE CLAMPS • STEEL AND C.I. FLEXIBLE COUPLINGS • FLEXIBLE REDUCING COUPLINGS

ONE MAN Roadbuilder

ALLIS-CHALMERS 2-CYCLE DIESEL TRACTOR WITH BULLDOZER AND SCRAPER

GREATER SUSTAINED PULLING POWER

of Allis-Chalmers Diesel Tractors and exceptional digging ability of Gar Wood 2-wheel scrapers enables you to load toughest materials quickly—including gumbo, hardpan and shale. The new HD-5 (above) is the ideal tractor for efficient work with the 3-yard scraper. For larger capacity . . . HD-7 tractor and 5-yard scraper is the correctly matched combination (below).

Rugged! Tough! Dependable!

Nearly all the dirt-moving jobs involved in the construction of a road or street can be handled with this fast-stepping combination. It's practically a one-man roadbuilder. You can use it three ways . . . with both scraper and bulldozer at the same time or with either unit alone.

There's the bulldozer for leveling, tearing down banks and other 'dozer work. There's the 2-wheel scraper for regular cut to fill dirt-moving . . . plus handling a multitude of other jobs. Rear-dump feature widens its usefulness. You can place material exactly where you want it — over slopes, around bridges, culverts and other close places. It is especially handy for digging trenches for pipe and culverts, making driveways and approaches and cleaning ditches.

Here is the ideal, all-'round outfit for stretching limited construction and maintenance budgets . . . for making the shrunken dollar go farther. It will pay you to investigate this one-man roadbuilder. Get all the facts from your Allis-Chalmers dealer.

ALLIS-CHALMERS

TRACTOR DIVISION — MILWAUKEE 1, U. S. A.

Conventions—When and Where

Conventions listed this month for the first time are indicated by an asterisk (*)

Mar. 13-15—St. Paul, Minn.
AMERICAN WATER WORKS ASSOCIATION—MINNESOTA SECTION. Annual Conference (Lowry Hotel). Sec.-Treas., R. M. Finch, 416 Flour Exchange, Minneapolis 15, Minn.

Mar. 19-21—Trenton, N. J.
NEW JERSEY SEWAGE WORKS ASSOCIATION. Annual Meeting (Stacy-Trent Hotel). Sec.-Treas., M. S. Kachorsky, Box 283, Manville.

Mar. 31-April 2—Chicago, Ill.
MIDWEST POWER CONFERENCE. Annual Conference (Palmer House). Conference Director, S. S. Winston, Evening Division, Illinois Institute of Technology, Chicago, Ill.

April 3-5, 1947—Clemson, S. C.
SOUTH CAROLINA WATER AND SEWAGE WORKS ASSOCIATION. Annual Meeting and Short School (Clemson College). Sec., D. F. Frick, 418 State Office Bldg., Columbia, S. C.

April 10-11—Buffalo, N. Y.
AMERICAN WATER WORKS ASSOCIATION—NEW YORK SECTION. Spring Meeting (Hotel Statler). Sec.-Treas., R. K. Blanchard, 50 W. 50 St., New York 20, N. Y.

April 13-19—San Francisco, Calif.
NATIONAL CONFERENCE OF SOCIAL WORK. Annual Meeting (Civic Auditorium). Gen. Sec., Howard R. Knight, 82 N. High St., Columbus 15, Ohio.

April 14-16—Fayetteville, Ark.
ARKANSAS WATER AND SEWAGE WORKS CONFERENCE. Annual Conference (Engineering Building). Sec., Harrison Hale, University of Arkansas, Fayetteville, Ark.

April 14-16—Montreal, Canada.
AMERICAN WATER WORKS ASSOCIATION—CANADIAN SECTION. Annual Convention (Mount Royal Hotel). Sec., Dr. A. E. Berry, Ontario Dept. of Health, Parliament Bldg., Toronto, Ontario.

April 17-18—Chicago, Ill.
AMERICAN WATER WORKS ASSOCIATION—ILLINOIS SECTION. Spring Meeting (Congress Hotel). Sec.-Treas., H. A. Tolburg, 2020 S. Fifth St., Springfield, Ill.

April 23-24—Havre, Mont.
MONTANA SEWAGE WORKS ASSOCIATION. Annual Meeting (Havre Hotel). Sec.-Treas., H. B. Foote, State Board of Health, Helena, Mont.

April 24—Atlantic City, N. J.
NEW JERSEY MOSQUITO EXTERMINATION ASSOCIATION. Annual Meeting (Hotel Haddon Hall). Sec., T. D. Mulhern, New Brunswick, N. J.

April 25-26—Havre, Mont.
AMERICAN WATER WORKS ASSOCIATION—MONTANA SECTION. Annual Meeting. Sec., C. W. Brinck, State Board of Health, Helena, Mont.

April 28-30—Milwaukee, Wis.
AMERICAN PLANNING AND CIVIC ASSOCIATION. Citizens Conference on Planning (Hotel Pfister). Exec. Sec., Miss Harlean James, 961 Union Trust Bldg., Washington, D. C.

April 28-May 1—Washington, D. C.
CHAMBER OF COMMERCE OF THE UNITED STATES. Annual Meeting (Chamber of Commerce Building). Gen. Mgr., Ralph Bradford, 1615 H St. NW, Washington, D. C.

***April 29-May 1—Grand Rapids, Mich.**
AMERICAN INSTITUTE OF ARCHITECTS. Annual Convention (Pantlind Hotel). Sec., A. C. Robinson, 1741 New York Ave., NW, Washington, D. C.

***May 2-3—Washington, D. C.**
NATIONAL RIVERS AND HARBORS CONGRESS. Annual Convention (Chamber of Commerce Building). Sec., Fred D. Beneke, 1615 H St., NW, Washington, D. C.

May 5-7—Cincinnati, Ohio
AMERICAN SOCIETY OF PLANNING OFFICIALS. Annual Meeting (Netherlands Plaza Hotel). Exec. Dir., W. H. Blucher, 1313 East 60 St., Chicago 37, Ill.

***May 7-9—Indianapolis, Ind.**
AMERICAN WATER WORKS ASSOCIATION—INDIANA SECTION. Annual Meeting (Antler's Hotel). Sec.-Treas., Charles Bechert, Room 200, Underwriters Building, Indianapolis, Ind.

May 15-16—Port Angeles, Wash.
ASSOCIATION OF WASHINGTON CITIES. Annual Meeting. Acting Sec., Joshua H. Vogel, University of Washington, Seattle, Wash.

***May 15-17—Victoria, B. C., Canada**
AMERICAN WATER WORKS ASSOCIATION—PACIFIC NORTHWEST ASSOCIATION. Annual Convention (Empress Hotel). Sec.-Treas., Fred

(*Continued on page 131*)

FOR WEEDLESS TURF

Kill weeds on fairways, play fields, and similar outdoor recreation areas with the BEAN All-Purpose Sprayer. One user weed-treated forty acres of fairways in ten hours applying liquid weedicide. Even distribution of high pressure spray makes possible controlled application of liquid fertilizers.

Light-weight Tuba-Lite Spray Boom attaches to front of tractor. Boom Wings are hinged, swing back upon contact with trees . . . fold against side of tractor for driving through gates.

Spray trees, shrubbery, flowers with BEAN Spraymaster Gun. Use as standby fire equipment while burning weeds and brush, or as an emergency fire fighter. Ideal for whitewashing, cleaning mud and grease from machinery, washing automobiles.

Write for catalog on new Bean Lawn Protector for safe spraying of 2, 4-D near flowers and shrubs.

John Bean Mfg. Co.

Division of Food Machinery Corporation

East of Rockies:
Address Dept. 27, Lansing 4, Mich.
West of Rockies:
Address Dept. 105, Bean-Cutler Div., San Jose, California.

BEAN All-Purpose Sprayer

INTERNATIONAL Diesel Crawlers

Your Best Bet for EXCAVATING

You can see for yourself in these photographs how the International TD-14 with a bulldozer blade gets on with a basement digging job. Here the average distance from cut to spoil was 60 feet, depth to dig was 6 feet, yardage dug was 420 cubic yards of clay. Total time required was 6½ hours.

Enough said when you say, "It's an International Diesel Crawler!"

Equipped with a bulldozer blade, it's your best bet for digging basements and other excavations.

With an International Diesel, whole blocks of basements can be dug in one operation—and economically. Then the same crawler can be used to spread the spoil and fill in between foundations or to push it over ramps into trucks for removal. And it can finish the job by building streets and landscaping the whole area.

No wonder many contractors who specialize in basement digging prefer the International Diesel Crawler.

Greatly favored for this work is the International TD-14 because its size is within limits which permit ready transportation on the streets and highways of most municipalities and states. Yet it is a powerful, fast working crawler, fit for your toughest assignments.

Ask the International Industrial Power Distributor near you to supply specifications and complete information about this and other International Crawlers, Wheel Tractors, Power Units and matched equipment.

Industrial Power Division

INTERNATIONAL HARVESTER COMPANY

180 North Michigan Avenue Chicago 1, Illinois

INTERNATIONAL IH INTERNATIONAL HARVESTER **Industrial Power**

Conventions—When and Where

(*Continued from page 129*)

Merryfield, Department of Civil Engineering, Oregon State College, Corvallis, Ore.

May 18-20—Philadelphia, Pa.
PENNSYLVANIA STATE ASSOCIATION OF TOWNSHIP COMMISSIONERS. Annual Conference (Benjamin Franklin Hotel). Sec., H. A. Fritschman, Havertown, Pa.

May 21-22—Lafayette, Ind.
INDUSTRIAL WASTE UTILIZATION CONFERENCE. Annual Conference (Purdue Memorial Union Building). Chairman, D. E. Bloodgood, Purdue University School of Engineering, Lafayette, Ind.

May 21-23—Cleveland, Ohio
AMERICAN PUBLIC POWER ASSOCIATION. Annual Convention (Hollenden Hotel). Gen. Mgr., Carlton L. Nau, 1129 Vermont Ave. NW, Washington 5, D. C.

May 26-29—Chicago, Ill.
NATIONAL FIRE PROTECTION ASSOCIATION. Annual Meeting (Palmer House). Managing Director, Percy Bugbee, 60 Batterymarch St., Boston, Mass.

May 26-29—New York, N. Y.
MUNICIPAL FINANCE OFFICERS' ASSOCIATION OF UNITED STATES AND CANADA. Annual Meeting (Hotel Pennsylvania). Exec. Sec., Miner B. Phillipps, 1313 East 60 St., Chicago 37, Ill.

May 26-27—Albany, N. Y.
NEW ENGLAND SEWAGE WORKS ASSOCIATION. Joint Spring Meeting with NEW YORK SEWAGE WORKS ASSOCIATION (Hotel Ten Eyck). Sec.-Treas., W. E. Merrill, 511A State House, Boston, Mass.

***May 27-28—Asbury Park, N. J.**
AMERICAN SHORE AND BEACH PRESERVATION ASSOCIATION. Annual Convention (Berkeley-Carteret). Sec.-Treas., Peter J. Gannon, 1060 Broad St., Newark 2, N. J.

June 4-6—Saratoga Springs, N. Y.
NEW YORK STATE ASSOCIATION OF CITY AND VILLAGE CLERKS. Annual Meeting. Sec., B. Nedd Sparks, Tupper Lake, N. Y.

***June 5-6—Estes Park, Colo.**
COLORADO MUNICIPAL LEAGUE. Annual Convention (Estes Park City Hall). Exec.-Sec., H. A. Storey, 327 Nortin Library, Boulder, Colo.

***June 18-20—Buffalo, N. Y.**
NEW YORK STATE CONFERENCE OF MAYORS AND OTHER MUNICIPAL OFFICIALS. Annual Meeting (Hotel Statler). Exec.-Sec., Morgan Strong, 6 Elk St., Albany, N. Y.
MUNICIPAL ENGINEERS ASSOCIATION. In conjunction with New York State Conference of Mayors. Annual Meeting. Sec.-Treas., Raymond W. Murphy, 61 Old Post Road, Rye, N. Y.

July 7-10—Toronto, Canada
SMOKE PREVENTION ASSOCIATION OF AMERICA. Annual Meeting (Royal York Hotel). Sec., Frank A. Chambers, 139 N. Clark St., Chicago, Ill.

July 7-11—Cincinnati, Ohio
NATIONAL EDUCATION ASSOCIATION. Annual Meeting. Exec. Sec., Willard E. Givens, 1201 Sixteenth St. NW, Washington, D. C.

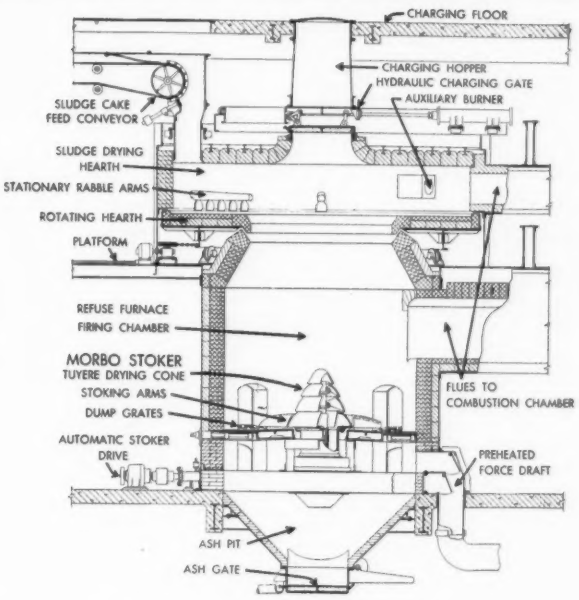
July 8-11—Winnipeg, Canada
CANADIAN FEDERATION OF MAYORS AND MUNICIPALITIES. Annual Conference (Hotel Royal Alexandria). Exec. Director, Miss J. Allan, Mount Royal Hotel, Montreal, Quebec.

***July 21-23—Wilkes-Barre, Pa.**
PENNSYLVANIA CHIEFS OF POLICE ASSOCIATION. Annual Meeting (Hotel Sterling). Sec., F. B. Titus, 80 Price Ave., Lansdowne, Pa.

July 21-23—Salt Lake City, Utah
NATIONAL ASSOCIATION OF COUNTY OFFICIALS. Annual Convention (Hotel Newhouse). Sec.-Treas., George F. Simmons, Ogden, Utah.

July 21-25—San Francisco, Calif.
AMERICAN WATER WORKS ASSOCIATION AND THE FEDERATION OF SEWAGE WORKS ASSOCIATIONS. Annual Conference. Sec., A.W.W.A., H. E. Jordan, 500 Fifth Ave., New York, N. Y. Sec., F.S.W.A., W. H. Wisely, 325-26 Illinois Bldg., Champaign, Ill.

Destructors for Combustible Wastes



Buy MORSE BOULGER

and you buy . . . **(1) Greater Selectivity**
(2) Modern Destructors
(3) Longer Experience
(4) Full Guarantee

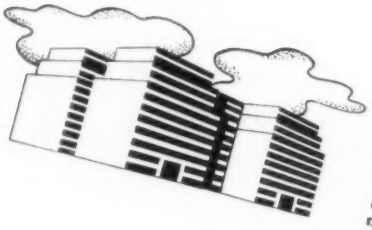
The progressive, sanitary-minded community will not tolerate open dumps or even ineffective, offensive waste disposal plants. It does want and will approve a unit of modern design and construction that will destroy garbage, trash, sewage sludges, institutional wastes and hospital organic matter without producing offensive smoke or odor.

We are interested in serving such communities because we have much to offer in the way of destructors. There's a Morse Boulger design capable of handling any combination of combustible wastes. Our units are *guaranteed* to give satisfactory results. Our field men stay with the job until it is operating 100% and instruct the crews so that they can carry on. Back of this service is 60 years' experience in the field of incineration.

Discussion of your problem and plans places you under no obligation. If there isn't a Morse Boulger representative near you, write us here in New York.

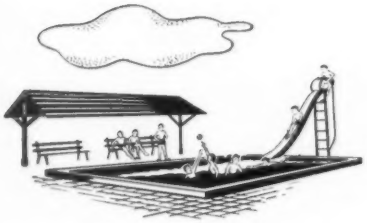
Morse Boulger Destructors include:
1. **Mechanically Stoked Incinerator, Bulletin 111**
2. **Cell and Hearth Type Incinerator, Bulletin 110**
3. **Rotary Hearth and Stoker Incinerator, Bulletin 111 (illustrated)**
4. **Multi-Zone Furnace, Bulletin 114**

MORSE BOULGER DESTRUCTOR COMPANY
205-R EAST 42ND STREET NEW YORK 17, N. Y.
Representatives in Principal Cities



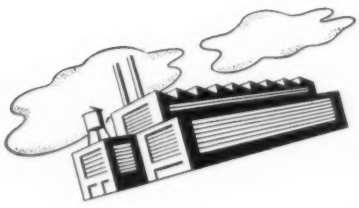
FOR THE HOUSING DEVELOPMENT

Slum clearance and unprecedented population growth in recent years have greatly increased demand for good municipal water.



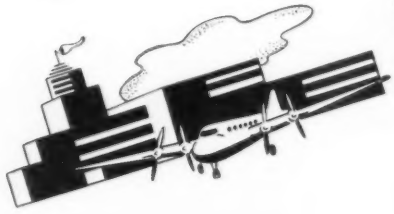
FOR PLAYGROUNDS

Proposed civic centers for recreation, such as swimming pools, will require great quantities of water and it must be *good* water.



FOR NEW INDUSTRIES

To attract new business, which provides jobs, a city must provide plenty of good water, industry's most important raw material.



FOR THE AIRPORT

As air travel becomes an integral part of our living, more and more of a city's supply of treated water must be allocated for airport use.

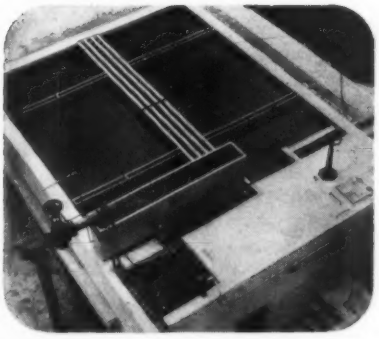
Will the WATER be good enough?

In *your* city's plans for better living, what about water? Is it *good enough* to meet the many *new* demands for municipal water—from builders, from industry?

Permutit* conditioned water comes into the home, hospital, playground and factory soft . . . clear . . . iron-free. It's the best treatment a city can give its water supply.

No wonder so many municipalities have turned to Permutit for the good water called for in postwar plans of city planning commissions. For your own information, write The Permutit Company, Dept. A3, 330 West 42nd Street, New York 18, N. Y. or Permutit Co. of Canada, Ltd., Montreal

*Trademark Reg. U. S. Pat. Off.



PERMUTIT SPAULDING PRECIPITATOR removes water hardness, dirt and color by the sludge blanket process. This new-design equipment cuts detention time, saves chemicals, takes only half the space of former methods. Present installations handle up to 120,000,000 gallons daily.

For more than 30 years **PERMUTIT**

WATER CONDITIONING HEADQUARTERS

News and Illustrations

Items of interest to city, town and county officials and others concerned with the economical construction and efficient operation of public improvement undertakings

Amusement Rides for City Parks

The Scoota-boat, one of the great attractions in amusement parks, is easy to handle, and highly maneuverable.

The makers of "auto-skooters" and "scoota-boats," used in amusement parks, have added to their line the "scoota-car," a machine built like a miniature racing car—wheels and all—in the streamlined design. Manufactured by the British Motor Boat Mfg. Co., Ltd., these three Rytecraft mechanical rides are obtainable in either electric or gasoline models.

The machines are all exceedingly simple to operate, utilizing a single pedal and a steering wheel. They are maneuverable and safe.

The cars have all-steel safety bodies, upholstered seats, and chromium trimmings. The motors are easy to maintain and readily accessible. The anti-vibration features add comfort to the ride, and reduce wear on the mechanism.

Simple enough for children to handle, the boats have a high degree of stability, so that overturning is impossible; the pneumatic bumpers minimize the effect of collisions. The gasoline-powered boats have the same motors as were used by the rescue boats during the war.

For further information, write to the British Motor Boat Mfg. Co., Ltd., Britannia House, Ampton St., London, W. C. 1, England. They will send you their illustrated brochure.

It's Fifty Years for Crouse-Hinds

The foundations on which the firm of Crouse-Hinds was built in 1897 have spread to carry the weight of a mighty plant. The conservatism, sound engineering, and pride of product continue. Jesse L. Hinds wanted to be a business man. They found each other and Mr. Crouse undertook to sell what Mr. Hinds produced. What they made then, they still make, with such changes and additions as new requirements imposed.

On January 18, 1897, Crouse-Hinds began making switches, panelboards, and switchboards all in greater demand today than then. There was also an electric headlight for trolley cars. Eighteen years later, with World War I a year old, that headlight developed into a complete line of floodlights and now a major production division of the company. These floodlights gleam under water in municipal swimming pools, turn night sports fields into day, and, as rotating beacons, swing round and round, their alternate clear and green flashes as good as shouting to the pilot, "here is that airport you are looking for." There is one for the small airport as well as for the large. One of these floodlights, of 1000-watt intensity, rotates at 6 rpm, carrying two lenses projecting two beams 180 degrees apart. If one needs to light an airport, this is it.

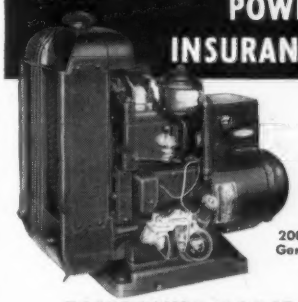
There are many uses for light. A lamp set in a pool wall makes indoor night swimming pleasurable. Crouse-Hinds has a dry-niche underwater unit and an ornamental floodlight besides floodlights for overhead lighting of swimming pools.

Seven years before Crouse-Hinds installed a complete lighting system for the Syracuse University stadium in 1929, the company had built a four-way, three-section traffic signal.

After fifty years, Huntington B. Crouse is gone, and with his passing in 1943, W. L. Hinds became president. Mr. Crouse formulated a firm policy of equal discounts to all distributors and equal prices to other purchasers. Revolutionary in those days, it has since been generally adopted by the electrical industry.

A handsome brochure has been issued in commemoration of fifty years of achievement of this internationally known organization.

EMERGENCY POWER INSURANCE!



2000-Watt Generating Set

FAIRBANKS-MORSE GENERATING SETS

INSURE yourself NOW against electric power failure. These performance-proved generating sets, installed as stand-by units, will give dependable service even under continuous, heavy-duty operation. A.C. and D.C. types, remote and automatic start, 350- to 35,000-watt capacities. Send today for **FREE** literature!

Fairbanks-Morse

A name worth remembering

FAIRBANKS, MORSE & CO., Dept. N
Chicago 5, Illinois

Please send free literature on Fairbanks-Morse Generating Sets.

Name.....

Address.....

City..... *State*.....

Original Woodcut by Lynd Ward

What a heartwarming thing it is for everybody—owner, neighbors, the whole nation—when the lights go on in a new house. Construction is improving, but there are still shortages of building materials and of the raw materials used in the manufacture of cast iron pipe for water, gas and sewerage services. Our five large plants are producing economical, long-lived U. S. Cast Iron Pipe and fittings to the maximum permitted by available raw materials. The outlook for increased production is favorable.

U.S.
cast iron
PIPE

U. S. PIPE & FOUNDRY CO.
General Offices: Burlington, N. J.
Plants and Sales Offices throughout the U. S. A.

The Bruning Printer-Developer.

New Bruning Printer-Developer Features Exclusive Designs

The Charles Bruning Co., Inc., 4754 Montrose Ave., Chicago 4, Ill., is manufacturing the new Bruning Model 91 BW Volumatic Printer-Developer, featuring exclusive designs to facilitate print production.

Increased light efficiency is provided by a stationary 75-watt-per-inch mercury arc light, mounted within the revolving Pyrex cylinder. With 50 inches between the electrodes of the lamp, ample and uniform light distribution is assured over the entire exposure area of the 46-inch cylinder.

Original copy and sensitized medium are removed from the cylinder after exposure by means of an air stream. No moving or metal parts come in contact with the glass cylinder, eliminating the possibility of scratching or dulling its surface.

Another exclusive feature is a tracing and print separator which automatically separates original copy from the sensitized medium. Suction is applied to the sensitized medium while an air stream simultaneously separates the original copy from it. This eliminates the necessity for exact registration when feeding prints.

The Bruning Volumatic possesses an extra-large feed board, providing more than 13 square feet of space for handling large-volume production without overcrowding. An on-off push button controls all electric motors and heaters, stopping all controls instantly. Another feature is the adjustable tray, permitting roll prints to be directed to a trimming table.

Requiring only one operator, the new Volumatic is intended for large-volume production of cut sheets, and accommodates roll stock up to 42 inches wide. It prints and develops all Bruning BW Mediums, including light, regular, or card-weight WB paper prints, produced in volume at speeds up to 30 feet per minute.

Styled by a leading industrial designer, the Volumatic can be installed anywhere in a drafting room or engineering department, depending upon individual requirements.

WHY—

The above illustration shows the position of the rubber lining in

Bi-Lateral Fire Hose

when it is held in a flattened position between calls into service. This is why we can save a city one replacement, because the hose will give double the service of any hose constructed under the old method.

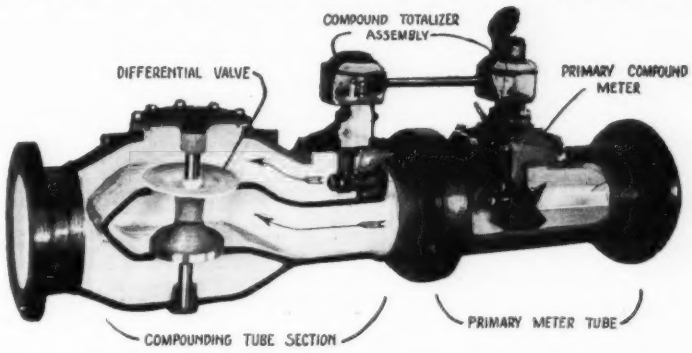
— Also —

We can load 25% more on the apparatus-bed, actually making an $8,000 truck loaded with the Bi-Lateral construction cheaper than one priced at $7,000 when loaded with other construction.

BI-LATERAL FIRE HOSE CO.

20 N. Wacker Drive, Chicago, Illinois

SPARLING MAIN-LINE METERS



Differential valve cracks at about one pound per square inch back pressure from the smaller meter. The smaller meter measures all flows below the minimum accurate range of the larger meter. Both meters drive through ratchet clutches to a common totalizer, which thus operates with the faster turning meter.

The COMPOUND for Main-Lines up to 36-Inch

Now, Sparling accuracy in wider flow-ranges—from 1-60 in 6-inch lines to 1-125 in 36-inch main-lines! And the lowest pressure loss of any Compound—less than 2 pounds psi. Flanged, Bell & Spigot ends.

•

For prices and flow-ranges see Bulletin 309, free upon request.

R. W. SPARLING
Manufacturers of WATER MEASURING EQUIPMENT

LOS ANGELES 54—Box 3277 Terminal Annex 622 Broadway ——— CINCINNATI 2
CHICAGO 16——3104 South Michigan Ave. 101 Park Avenue——— NEW YORK 17
BOSTON———6 Beacon Street

Low Cost Insurance FOR SERVICE PIPING

STREAMLINE Copper Service Pipe represents one of the lowest cost forms of insurance that water works officials, who are responsible for the return on a heavy capital investment, can adopt.

In normal times STREAMLINE Copper Pipe compares very favorably in cost with ferrous pipe, yet with the exception of certain abnormal soil and water conditions, it never has to be replaced due to rust or internal corrosion. Consequently, there is no discoloration of the water nor decrease in volume or pressure, such as is invariably found, after a few years, with corrodible piping.

Leaks due to vibration are eliminated. A STREAMLINE Copper Service Pipe installation is practically vibration proof, settlement of filled earth or water mains have little or no effect upon it. Its quality of ductility permits sufficient stretch to take care of this condition without failure of the pipe.

STREAMLINE Service Pipe (Type K) is the original copper service pipe, and the first to be produced in America for water service work. It is the most uniformly soft and pliable pipe possible to secure—it is kept that way through the use of the best copper obtainable for the purpose and through strict laboratory control through every phase of its manufacture.

When your plans call for pipe and fittings for replacement or for postwar work, carefully consider STREAMLINE. Its use will repay you many times over.

STREAMLINE
PIPE AND FITTINGS DIVISION
MUELLER BRASS CO.
PORT HURON, MICHIGAN

Worthington Adopts Firm Price Policy

Clarence E. Searle, President, Worthington Pump and Machinery Corp., Harrison, N. J., announced recently that prices of all Worthington products —which cover a broad field of power plant machinery, air conditioning and refrigeration equipment, diesel and gas engines, road construction machinery, motors and generators—are now being quoted on a firm basis. This means that prices are not subject to any increase above the prices in effect on the date the order is placed.

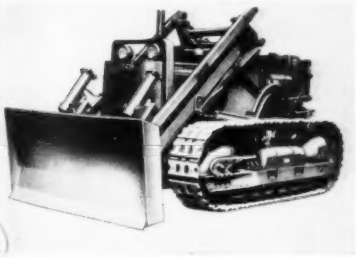
The exception is the prices of major purchased components, such as motors and other electrical equipment, and steam condenser tubes on which Worthington's policy is to quote similar price protection as that required by its suppliers.

The firm-price basis applies to Worthington's entire operations, with the exception of two subsidiaries which are especially dependent upon copper and steel plate. As soon as they can procure their requirements with reasonable assurance of no additional cost increases, the firm-price policy will be also adopted by the subsidiaries.

New Bulldozer-Shovel

The Frank G. Hough Co., 710 Sunnyside Ave., Libertyville, Ill., has announced the new Model 9-A bulldozer-shovel, specifically built into the International T-9 and TD-9 TracTracTor.

This dual purpose unit may be equipped with either a full track width 1-yard bucket or bulldozer blade. Since it was specifically designed and built into the tractor, the original tractor balance, stability, and traction are maintained with both blade or bucket.



The bucket is raised, lowered, dumped, and relatched entirely by hydraulic control. The bucket tilts back automatically in carrying position to prevent spillage. Overhead and side structures are eliminated, providing full 360° visibility while digging, carrying, or dumping, as well as assuring better balance and stability, with reduced wear on front track rollers and idlers. A long, high, dumping reach provides for dumping into trucks, hoppers, etc.

A new catalog, #164, complete with mechanical details and specifications, has been issued and is available on request.

Bucket unloads in less than a minute under fingertip control.

This new HEIL COLECTO-PAK Municipal Refuse Disposal Body gives you

★ Low loading height
★ Double capacity
★ Complete enclosure
★ Easy maintenance

Automatic, hydraulic-operated packer plate packs 20 yds. in a 10-yd. body.

Tapered body construction assures speedy discharge regardless of compression.

The all-enclosed, water-tight Heil Colecto-Pak is the answer to your search for a modern method of speeding-up, simplifying, and improving garbage collection and disposal.

This unit has a ¾-yard loading bucket at a 35-inch height making it extra easy to load. This "power-lifted" bucket deposits load and returns to starting position in less than a minute. At the same time the hydraulic-operated packer plate is compressing the material down toward the discharge end. It is possible to compress 20 yards of wrapped garbage into this 10-yard body.

With this unit your city has a clean, sanitary means of collecting garbage with none of the unsightly and unsanitary features imposed by "open body" collectors. Your city can feel proud of its advanced thinking in purchasing a Heil Colecto-Pak.

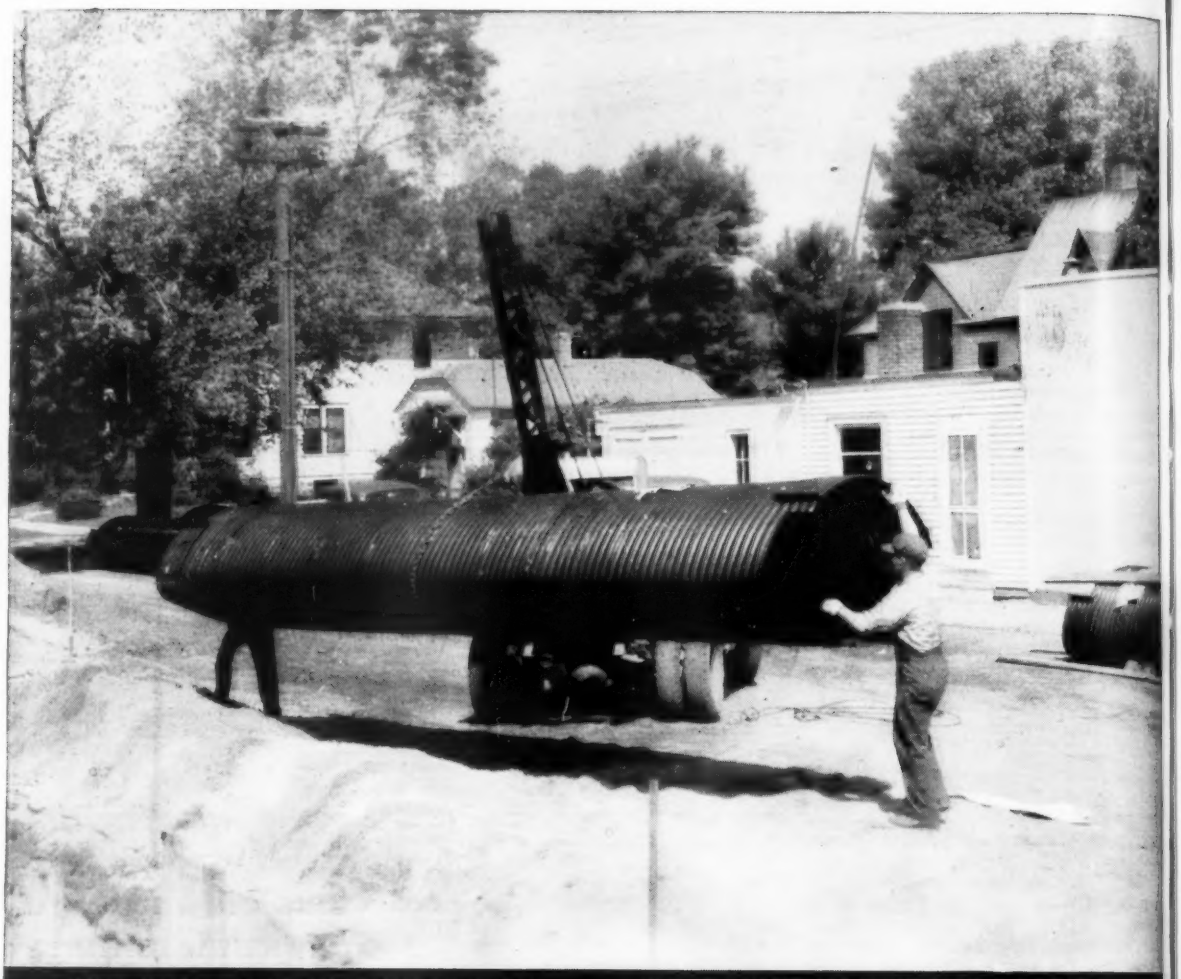
BH-114

Write for bulletins.

ARMY NAVY

THE HEIL CO.

GENERAL OFFICES • MILWAUKEE 1, WISCONSIN



Where headroom is limited—where you have to "duck" under an intersection or railroad, for example —ARMCO Pipe-Arches offer an ideal solution. Like other types of ARMCO Asbestos-Bonded Sewer Pipe, these arches are strong, light in weight, easy to handle, and assure years of low-cost trouble-free service.

Speed On The Job... *Easy On The Budget*

Installing ARMCO Asbestos-Bonded Sewer Pipe is easy . . . simple . . . fast. The long, light-weight pipe sections are lowered into place and securely coupled in jig-time. No curing and speed is the word — the kind that saves money, work, valuable days.

And for all its speed-on-the-job, there is no worrying later — your maintenance and replacement budgets can "relax." ARMCO Corrugated Pipe has the flexibility to withstand vibration, impact and heavy dead loads. Asbestos-Bonding plus a thick bituminous pavement in the bottom stoutly resist corrosion and erosion. And where there is not enough headroom for round pipe, ARMCO Pipe-Arches could well be the answer.

An experienced Armco Engineer will gladly give you full information — sizes, prices, delivery data — on ARMCO Asbestos-Bonded Sewer Pipe. Write our nearest office for full data. Armco Drainage & Metal Products, Inc., 735 Curtis Street, Middletown, Ohio.

ARMCO

Armco Asbestos-Bonded Sewer Pipe

New Coal Pulverizer Improves Boiler Operation

A new coal pulverizer known as the Steam Jet Fuel Pulverizer produced by Blaw-Knox Co., Pittsburgh 22, Pa., was publicly revealed for the first time at the recent power show in New York.

The unusual feature of this device is its lack of moving parts, except for a screw drive that feeds fuel into the unit. Super-heated steam, at a temperature of 750 to 900°F and a pressure of 100 pounds, does the pulverizing. The powdered coal is then entrapped by steam and delivered to the burners in a fluid stream, much like a gas. Engineers report that the fluid-like coal achieves thorough combustion and produces a minimum of smoke and fly ash.

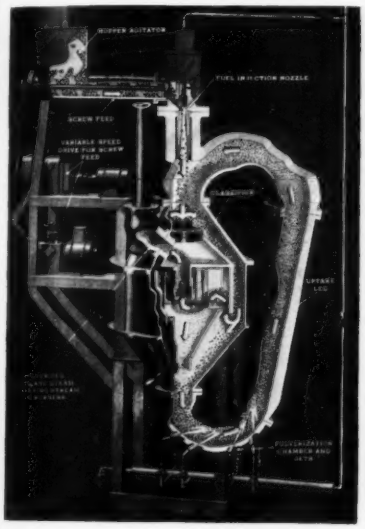
Tests reveal that the finely divided coal particles from the pulverizer (better than 90% through a 200-mesh screen) produce an average dust loading per cubic foot of flue gas that is definitely lower than the permissible limit prescribed by the smoke ordinance of most large cities. This ability to comply with ordinances covering smoke and fly ash is achieved without the need for special auxiliary equipment for removal of fly ash.

The pulverizer operates on either wet or dry coal. The units are small in size and can be set on ordinary floors without special foundations. They are adapted for capacities up to 10,000 pounds of fuel per hour as required.

The steam may be separated from the coal at the burners, or in successive stages before it reaches the burners; or, if desired, it may be sent through the burners into the boilers. The first alternative would be typical practice for most power and steam plants and would permit the use of the residual heat in the steam to pre-heat the intake air or feed water, or to do other heat salvage work.

A special model is adopted for use in pulverizing anthracite and the pulverizer can be used with any of the solid fuels in commercial use—bituminous, semi-bituminous, anthracite, or coke breeze. The anthracite model employs a special arrangement of the steam jets.

An "electric eye," trained on the flame at the boiler burners, insures automatic stoppage of the pulverizer in event of loss of ignition due to any cause.



This diagram shows the working of Blaw-Knox's new Steam Jet Fuel Pulverizer. By the use of super-heated steam the coal is puverized and the powdered coal then entrapped by steam and delivered to the burners in a fluid stream.

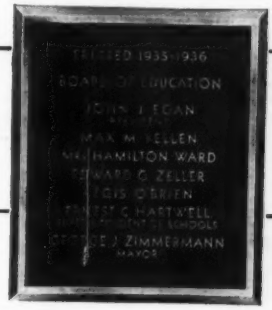
Graver Purchases Houston Tank Company

A joint announcement has been made by Graver Tank & Mfg. Co., Inc., East Chicago, Ind., and Banks Moreland of Houston, Texas, to the effect that the tank business formerly conducted under the name of Banks Moreland Co., has been purchased by the Graver organization.

The Houston Company will continue to operate in the southwest as the Banks Moreland Company, a Division of Graver Tank & Mfg. Co., Inc. It will be under the management of Banks Moreland, who has been made a vice-president of Graver Tank & Mfg. Co.

SPECIALISTS in

BRONZE TABLETS



For Every Municipal Need

Memorial and Commemorative Tablets for Municipal Buildings—Hospitals • Homes • Courts • Schools • Art Centers.

Bronze Tablets and Letters for Statues, Cornerstones, Doorplates, Signs.

Send for illustrated catalog with complete "order-by-mail" information.

UNITED STATES BRONZE SIGN CO., INC.

"Bronze Tablet Headquarters"

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INSTALLATIONS WORLD WIDE

LARGEST CITY TO SMALLEST VILLAGE

VALVES COMPLETE EQUIPMENT FOR WATER WORKS FILTRATION AND SEWAGE DISPOSAL PLANTS

LATEST "COREY TYPE" **HYDRANTS**

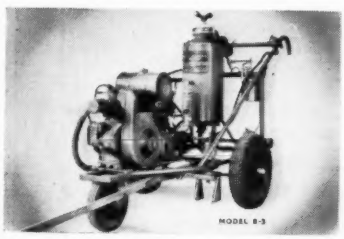
Write for Catalog and Information

IOWA VALVE CO.

General Offices:
Hubbell Bldg., Des Moines, Iowa

Plant:
Oskaloosa, Iowa

This is the Kelly-Creswell Model that will SOLVE your Municipal Zone-Marking Problems.



Uniform Cross-Distribution
Clean-Cut, Attractive Lines
Pressure Cleaning Equipment
Air-Actuated Traction.

More Highway Zone-Marking Material is applied thru K-C Equipment than thru any other make. ***There must be a reason.***

KELLY-CRESWELL CO., Xenia, Ohio

GUNITE *Rebuilds Reservoir*

This concrete reservoir, used for water storage in a Virginia city, developed a crack. Leakage undercut a portion of the sides and bottom, resulting in a major failure and leaving the city without storage facilities. Our engineers were consulted and a GUNITE repair (sand and cement applied pneumatically) was begun.

The concrete over the undercut area was chipped out and the cavity filled with broken concrete, stone, and shot with GUNITE. All disintegrated concrete throughout the reservoir was chipped out and discarded. These areas were restored to original lines and an entirely new 2" reinforced lining was applied with GUNITE, as illustrated.

This repair was done rapidly, efficiently, and economically by men who know their business. It resulted in a new reservoir, completed and put into service 28 days after our forces started work. Write for our recommendations on how GUNITE can solve your concrete maintenance and construction problems. An attractive bulletin is awaiting your request.

PRESSURE CONCRETE COMPANY

ENGINEERS AND CONSTRUCTORS

6 AVENUE B
NEWARK, N. J.

SOUTH COURT ST.
FLORENCE, ALABAMA

LEADITE

FOR JOINTING CAST-IRON WATER MAINS

Melted and Poured ***No Large Bell-holes to Dig***

Saves at Least 75%

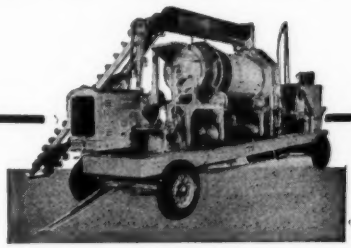
Leadite is shipped in powder form, packed in sacks of 100 lbs. net each. Leadite tested and used for over 50 years ● Leadite joints improve with age.

Be sure it is Leadite and accept no imitations

THE LEADITE COMPANY

Girard Trust Co. Bldg., Philadelphia 2, Pa.

No Caulking



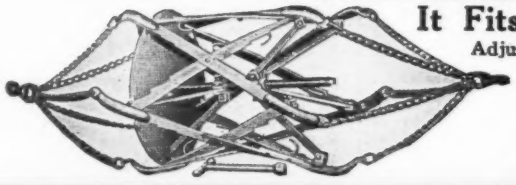
PORTABLE ASPHALT PLANTS

Write for Catalog

Elkhart **White Mfg. Co.** Indiana

EXPANDING ROOT CUTTER & SEWER CLEANER

Open and in action removing roots and caked sediment like this.



It Fits in on Every Sewer Cleaning Job

Adjusted in 30 seconds to fit any sewer from 8 to 30 inches.

Will clean the entire sewer wall, top, and sides as well as the bottom, cutting and removing the roots and caked sediment, putting the sewer system in almost 100% clean condition.

Write for our new catalog on complete sewer cleaning equipment.

EXPANDING SEWER MACHINE COMPANY

108 East Walnut St. **Nappanee, Ind.**

Clay Pipe with French Drain Principle

Because subsurface drainage for airports still is the keystone of successful airport pavement maintenance and the key to maximum useable operating time of the field, French drains with an "American accent" are finding favor in many airport drainage installations.

Perforated or unperforated clay pipe, laid with open joints and enclosed in a suitable filter of broken stone, gravel, slag, or similar aggregates, provides highly efficient subsurface drainage. The filtering medium prevents entrance of fine material into the pipe line, and its open structure permits rapid drainage. In this way, ground-water levels can be controlled at safe depths below paved surfaces. The clay pipe provides a conduit for leading subsurface water to the point of ultimate discharge.

The number and arrangement of the drains can be suited to any type of subsurface soil condition, particularly since such systems can be added to almost indefinitely. Write to the National Clay Pipe Mfrs., Inc., for details of construction and usages. Their offices are located at 571 Chamber of Commerce Bldg., Los Angeles 15, Calif.; 522 First National Bank Bldg., Atlanta 3, Ga.; 1105 Huntington Bank Bldg., Columbus 15, Ohio, and 111 West Washington St., Chicago 2, Ill.

A typical clay pipe-French drain installation, requiring a minimum of maintenance.

FWD Provides Facilities for Skid Tests

The National Safety Council's 1947 skid tests, under the direction of Ralph A. Moyer, professor of highway engineering, Iowa State College, will be held at Clintonville, Wis., where facilities for the tests are being provided by The Four Wheel Drive Auto Co., according to Herman Larson, FWD experimental engineer and a member of the council's committee on winter driving hazards.

One of the primary purposes of the tests this year will be to obtain a comparison of the traction characteristics of a four-wheel-drive as compared to a two-wheel-drive truck. Other tests scheduled include more complete investigation of sanders and grits, and a more thorough comparison of synthetic and natural rubber tires.

Facilities being considered include paved surfaces of a half-mile test track at the FWD proving grounds, a length of state highway near Clintonville which can be blocked to traffic and flooded, and the level surface of the Clintonville airport. These facilities tend to eliminate objections to tests on lake ice, which the committee feels does not produce the results road ice does for testing heavy trucks equipped with tire chains.

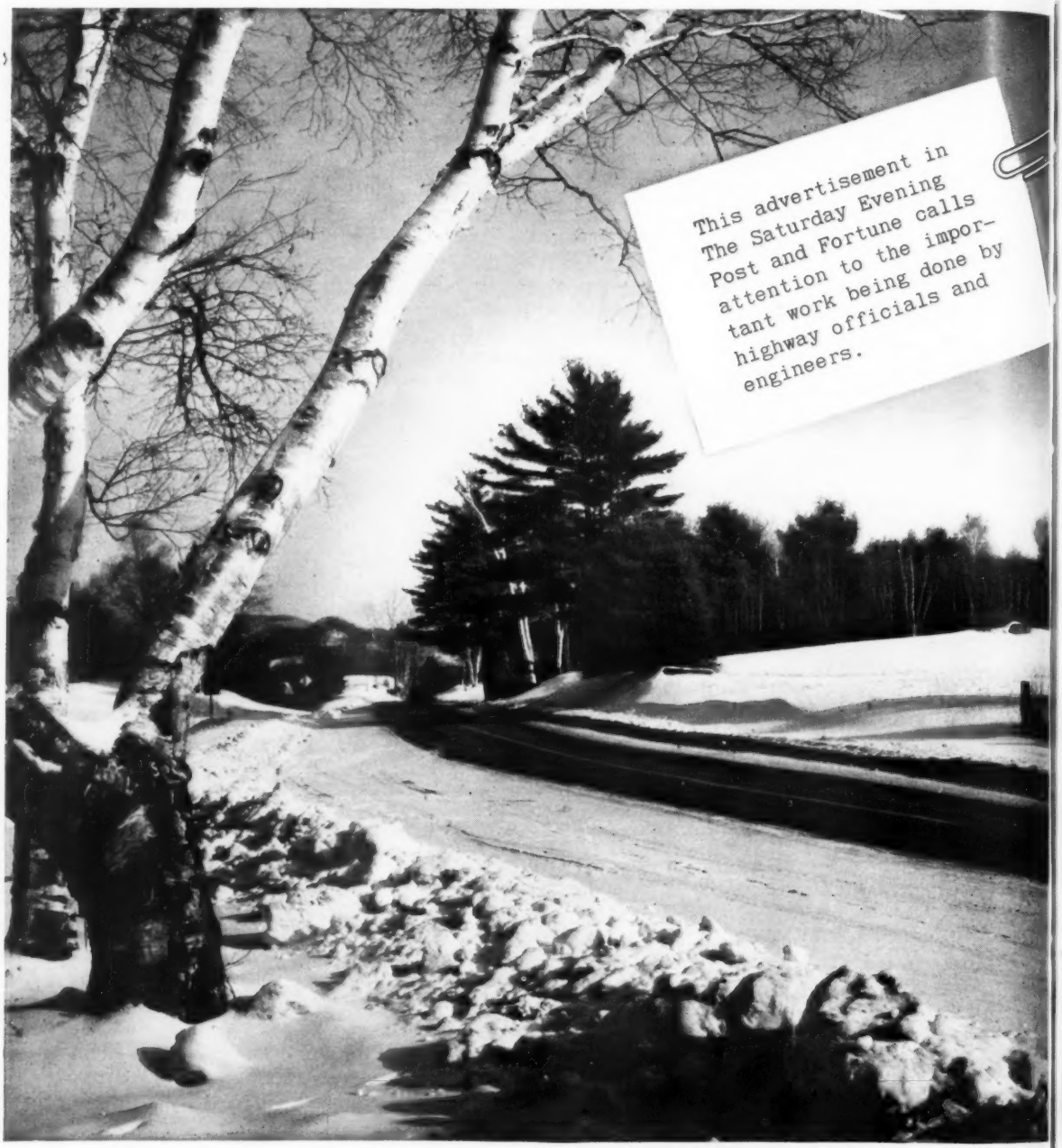
Peerless Pump Holds First Post-War Sales Conference

The Peerless Pump Division of the Food Machinery Corp., Los Angeles, Calif., recently held its first post-war general sales conference at its Los Angeles factory.

F. E. Fairman, Jr., vice-president, presided at the opening of the conference, which consisted of sales discussions and included a presentation of plans for additional complete service to distributors and customers.

SHADE TREE
PEST CONTROL
Hardie Shade Tree Sprayers provide abundant capacity and sustained high pressure for spraying from the ground the tallest trees quickly, thoroughly and with a minimum of labor. The same Hardie Sprayer serves many other urgent timely needs in modern municipal management. Write for Catalog. The Hardie Mfg. Company, Hudson, Mich., Los Angeles 11, Calif., Portland 9, Oregon. Export Dept. Book Tower, Detroit 26. Canadian Office, C. W. Lewis, Grimsby, Ontario.
Hardie DEPENDABLE SPRAYERS
THE ONLY SPRAYER THAT IS COMPLETELY LUBRICATED

COUNTRY ROADS...America has some 2½ million miles of rural roads. They are the heart of our highway system, linking the farmer to his market. For paving such roads serviceably and economically, highway officials and engineers have long relied on a Barrett basic product, Tarvia* road tar.



ONE OF AMERICA'S GREAT BASIC BUSINESSES
Paving Materials . . . Building Materials . . . Wood Preservatives
Protective Coatings . . . Coal-tar Chemicals . . . Nitrogen Products

Barrett*

THE BARRETT DIVISION
ALLIED CHEMICAL & DYE CORPORATION
40 Rector Street, New York 6, N.Y.

*TRADE MARK REG. U. S. PAT. OFF.

REMINDER TO ROAD MEN. Now is the time to check the condition of all the roads in your territory. If any have been damaged by winter frosts and snows, investigate the economy of putting them back in first-class shape with the help of Tarvia* road tar. Ask the Barrett field man.

Morse Boulger Appoints Beacom

John Patrick Beacom has resigned his position as assistant to the president of Simmonds Aerocessories, Inc., 1250 Sixth Ave., New York, N. Y., to become associated with the Morse Boulger Destructor Co., 205 East 42 St., New York, N. Y., as director of public relations for this long - established manufacturer of industrial and municipal incinerators.

John Patrick Beacom

Mr. Beacom has a wide acquaintance in the national government as well as in state and city governments. Besides being a former state senator and a member of the House of Representatives from his home state of West Virginia, he has been active in the Council of State Government and the Committee on Inter-State Cooperation and has served on both bodies.

In 1946 he was appointed associate chairman of the Citizen's Defense Council to assist Governor Robert Kerr of Oklahoma, chairman, in the promotion of the campaign to unify the armed forces as advocated by President Truman. With the recent announcement by the President that the service branches had agreed to the unification plan, the council has been dissolved and its Washington office closed.

Mr. Beacom's work with Morse Boulger will be directed toward expanding its already large volume of municipal and governmental incinerator business. He will continue to spend some of his time in Washington, but is soon to make a tour of the country in the interest of municipal sales.

Gannett, Fleming, Corddry, & Carpenter Celebrate Thirty-Second Anniversary

With the record of over 2,100 successfully completed municipal and private projects behind the organization, Gannett, Fleming, Corddry, and Carpenter, Inc., Harrisburg, Pa., will this year celebrate its thirty-second anniversary.

Essentially an engineering organization, the firm specializes in dams, sewage disposal, roads, bridges, and appraisal work. Its construction division confines its work largely to dam repairs, pipeline and grading work, and rental of its comprehensive line of construction equipment.

The company owns and manages twelve water companies in Pennsylvania.

Experimental Testing Area for International Harvester

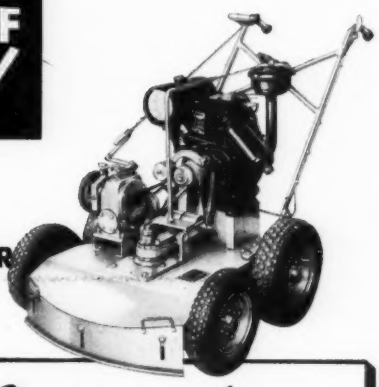
The International Harvester Co., 180 North Michigan Ave., Chicago 1, Ill., has leased 1,920 acres of land near Phoenix, Ariz., as a site for experimental testing activities, according to a recent announcement by H. T. Reishus, general manager of the company's Industrial Power Division.

This land will be used as a testing ground for International Harvester's line of industrial power equipment, which includes heavy crawler tractors, power units, etc. In addition, several makes of allied industrial equipment will also be tested.

KEEP AHEAD OF YOUR *grass!*

WITH A TRADE-MARK WHIRLWIND Reg. U. S. Pat. Off.

THE ONLY POWER MOWER WITH THE 15-YEAR SERVICE PROVED



ROTARY-SCYTHE SUCTION-LIFT *Cutting Action*

Even though rapid spring growth or heavy rains may crowd your grass-cutting schedule . . . no matter how lush and rank the grass may be, it will never be "out of bounds" for easy, clean mowing if you are equipped with a WHIRLWIND Power Mower.

Because of its patent-protected, rotary-scythe suction-lift cutting action, this mower cuts grass and weeds of any height, in any condition . . . cleanly, uniformly, rug-smooth. Mulchifies clippings for self-fertilization of turf. No need for a "grass catcher" or hand raking.

Keep ahead of your grass-cutting schedule with a WHIRLWIND. Write for free literature and name of dealer nearest you. Address Dept. CI-347

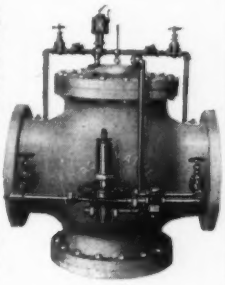
The 20-inch cut WHIRLWIND Junior is ideal as auxiliary equipment for mowing closely confined irregular areas. Cuts close to fences, trees, flower beds, under shrubbery. It's light in weight, highly maneuverable, powerful.

WHIRLWIND LAWN MOWER CORP.
730 W. Virginia St. Milwaukee 4, Wisconsin

ROSS AUTOMATIC VALVES

Altitude Valves for tank and reservoir, with two sets of controls — Automatic Hydraulic and Electric Remote Control. Hydraulic pilot normally operates the valve, while electric pilot is used for emergency only.

Model 40-DAWR Double Acting Valve may be operated by electric pilot regardless of elevation of water in tank or reservoir, for a break in supply or distribution and when fire pressures require direct pumpage. Model 30-AWR Single Acting Valve may be controlled in same manner.



Model 40-AWR Single Acting semi-throttling valve will close on reversal of flow and the electric pilot would serve only a single purpose — either to open wide or close as emergency may require.

Established 1879

ROSS VALVE MFG. CO. *Incorporated*

P.O. BOX 596, TROY, N.Y.

"FREEZING?

never heard of it!"

The weather may be cold and damp —but a Gardner-Denver Backfill Tamper goes right on working at top-notch efficiency! There's no tendency of valve or exhaust to freeze. Its piston rod packing retains its seal for months without adjustment or renewal. The double taper fit of the butt and its lock-nut keeps the butt always tight. Here are additional reasons why you'll want to standardize on Gardner-Denver Backfill Tampers for your job.

✳ *Easy to walk over the fill — a favorite of operators.*

✳ *Integral oil reservoir feeds only when tamper is in operation — assures complete lubrication of working parts.*

✳ *Low lift end-seating type valve will sustain efficiency of piston action over a long period of time.*

✳ *Piston rod packing and butt attachment conveniently arranged for quick and easy access.*

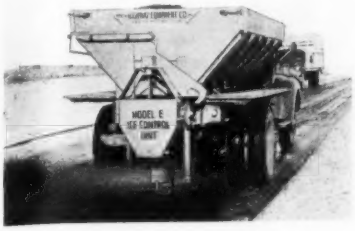
For complete information, write Gardner-Denver Company, Quincy, Illinois.

GARDNER-DENVER

USE COMPRESSED AIR FOR SAFETY CONVENIENCE FLEXIBILITY

SINCE 1859

Year-Round Spreader for Dust Control or Icy Streets



Removable deflector directs spread ahead and to left. When it is removed for four-lane operation, material is cast to both sides.

A new all-purpose highway spreader is being produced by the Highway Equipment Co., Inc., Cedar Rapids, Iowa, for municipal use in summer and winter to control dust or to remove the danger of icy roads.

Featuring speed, safety, and versatility, the highway model E spreader distributes calcium chloride to control dust in the summer and to apply seal coats on oil. Designed to spread quickly a protective coat of sand or cinders on slippery pavements, the unit is invaluable during the winter. The distributor disc is mounted close enough to the highway to cast the material low, eliminating interference with traffic. Material is cast ahead of the rear wheels of the truck, providing traction for the truck and safety at any operating speed. Spreading may be controlled to cover the full width of either 2- or 4-lane highways in one operation. The thickness and width of the spread are also easily controlled from the driver's seat.

The large hopper can be filled with material in advance and held in readiness for emergencies. Built in four lengths to mount on any truck chassis, the Highway Model E is driven by power take-off from truck transmission. Drive gears operate in oil and are protected from dust and weather.

By removing the distributor disc, the unit may be used for hauling different types of material, and is ideal for hauling and spreading chips and small rocks for maintenance of shoulders.

One Unit Pumps Either Screenings or Sludge

The design and operation of the smaller sewage treatment plants will become somewhat simpler with the use of a new pumping unit designed by Yeomans Brothers Co., 1431 N. Dayton St., Chicago 22, Ill. This pump, the Type "SS" pneumatic ejector, will not only pump sludge using the Shone principle, but will also eject screenings directly without the need of grinding or shredding machines, sending the screenings to the digester and eliminating any need for additional treatment processes in any of the settling tanks.

Operation of the Type "SS" pneumatic ejector is simple and identical with that of the Shone ejectors. Sludge, screenings, scum, or grease flows by gravity into the receiver through the inlet check valve. When the receiver pot is filled, compressed air is admitted, forcing out the material until an open-bell valve shuts off the supply of air and opens the exhaust port. The receiver then refills, and the cycle is repeated.

The method of handling the screenings is equally simple. Raw sewage enters a hopper-bottomed screen channel with a conventional submerged bar rack. Upon entering the screen channel, raw sewage is conducted to the lower side of the bar rack. Screenings larger than bar spacings are retained on the underside of the screen in the small hopper. From the bottom of the hopper a pipe leads to the inspection well. The pipe in the inspection well is provided with a shear gate.

Screenings accumulated in the hopper are removed by opening a shear gate, causing a head of sewage to backwash the screen and carry screened material to the inspection well, whence it flows by gravity into the ejector to be discharged directly to the digestion tank. Thus screenings are disposed of in one operation, eliminating a second handling from the primary tanks.

The company will send literature upon request.

NOW *available*

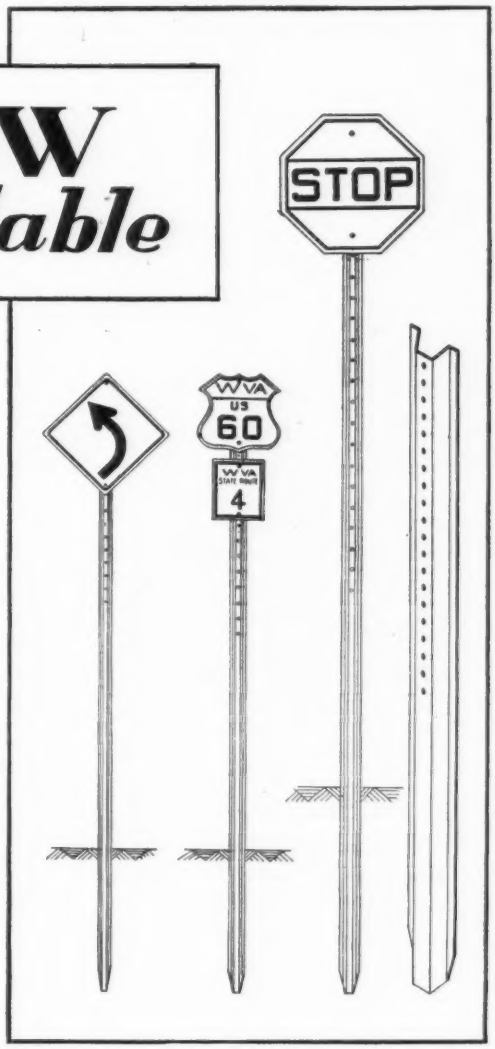
SIGN POSTS!

ROUTE MARKER POSTS!

Good signs should have good supports. HUNT Sign Posts are of consistently high quality—manufactured of rail steel for high tensile strength and finished with a glossy weather-resisting baked-on green enamel.

Also available are a complete line of standard Stop, Warning and Reflectorized signs; also Street-Name and Portable Warning signs.

Write for Catalog and Prices, to Steel Products Division



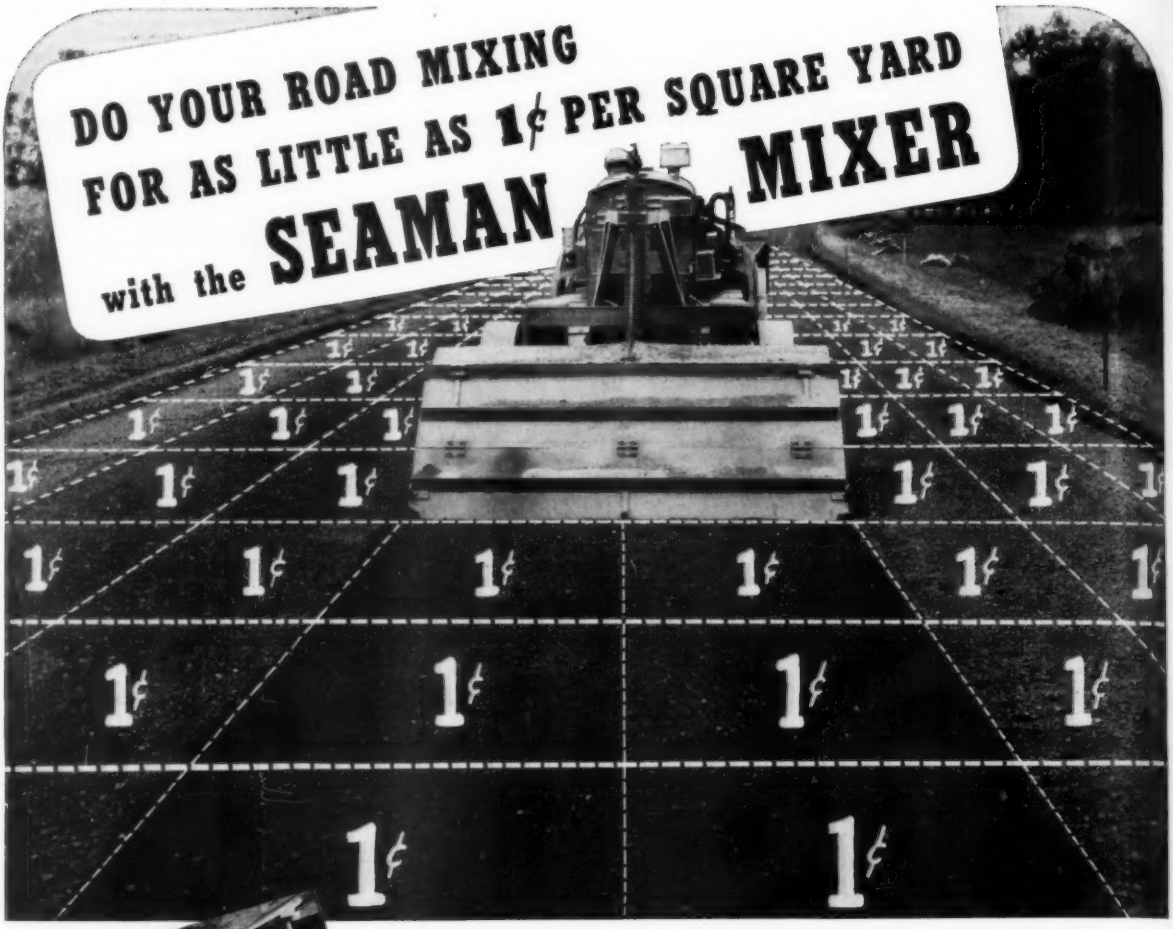
THE HUNT COMPANY
DETROIT 21

THE HUNT COMPANY

Established 1920

3700 W. McNichols Rd. Detroit 21, Mich.

DO YOUR ROAD MIXING FOR AS LITTLE AS 1¢ PER SQUARE YARD with the SEAMAN MIXER



Pocket size but packed with useful, practical facts,—the ever-popular "Soil Stabilization Methods,"—a book compiled by Seaman engineers. Yours on request.

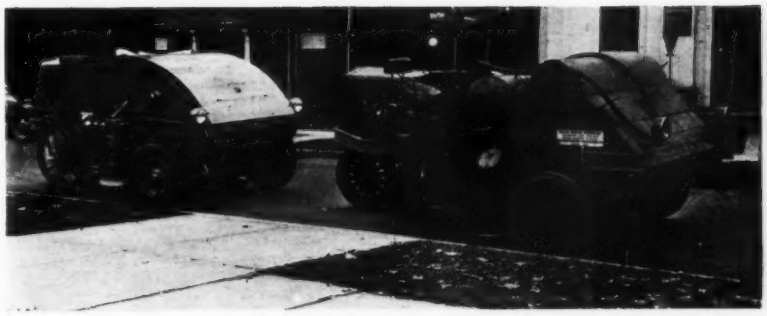
Ask for Bulletin AC-25.

While costs of operating any mixing equipment vary according to the character of mixed materials, local labor rates and several other factors,—nevertheless, under reasonable conditions, careful cost analyses have repeatedly shown that the motorized SEAMAN MIXER—Model MHD-72, produces a thorough, uniform and intimate mix for as low a cost as one cent per square yard. Even under adverse conditions costs generally do not exceed 5 cents . And with the SEAMAN MIXER, low-operating cost is coupled with high daily output. One Model MHD-72, operating in conjunction with a motor patrol, will mix 100 tons an hour,—or operating with a 100 ton conventional travel plant, will double that capacity. Calculated on the basis of square yards,—the SEAMAN MIXER can be counted on for 5000 square yards in an eight hour day, in fact, under good operating conditions, Model MHD-72's have repeatedly turned out over 9000 square yards in 8 hours . . . What's more,—SEAMAN MIXERS represent a surprisingly small investment. Prices start as low as $869.00 F.O.B. Milwaukee.

SEAMAN MOTORS, INC.

305 NORTH 25th STREET

The Old and the New



Pictured here are two Elgins owned by the city of St. Catherines, Ontario, Canada. The old Model A, shown on the right, was delivered in 1921 and is still in operation, having given the city twenty-six years of efficient service.

The Elgin 30, recently received by the city, shows the result of continuous improvement in design, construction and styling by the manufacturers, the Elgin Sweeper Co. The Model A of the 1920's with its part wood construction, solid tires, hand operating levers and 4-cylinder engine has been replaced by the modern design of the new Elgin 30.

This newest machine, while equipped with its large capacity dirt hopper—guaranteed 2½ cubic yards—and its ability to sweep a path 7½ feet wide, is a compact, streamlined, easy-to-operate machine of all-steel construction.

Equipped with a powerful 113 (max. brake) horsepower 6-cylinder engine; hydraulic controls for operating brooms, conveyor, and dirt-box dump door, and hydraulic brakes and pneumatic tires, it is prepared to do the kind of street cleaning job required in these modern times.

Wood Promoted by American Coach & Body

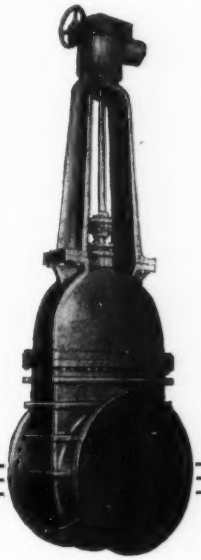
Clarence G. Wood has been appointed director of sales for The American Coach & Body Co., Cleveland, Ohio, according to an announcement by Allen T. Greiner, president.

Clarence G. Wood

Mr. Wood joined the organization early in 1946 as manager of sales promotion, after having served four years as a commissioned officer in the U. S. Army Ordnance Department. He was moved up to director of sales in October.

He has had wide engineering, production, and sales experience in the automotive industry. For several years, before and after World War I, he was with Hoosier Auto Parts Co., Muncie, Ind., as vice-president and secretary. Mr. Wood also operated his own engineering company and in 1927 developed a new pump design which was marketed under the name of Auto Prime Pump Company of Cleveland. After selling the business, Mr. Wood joined Monmouth Products Co. of Cleveland, automotive parts manufacturers, as director of sales and engineering. Ten years later, he established an automotive parts jobbing business and a distributing organization for plastic products, machine tools, and welding material.

In late 1941, Mr. Wood, a member of the Army Officers Reserve Corps, was called into active duty with the Ordnance Department and served there until late 1945, when he established his own distributing company.



The **LONG** *and* **SHORT** *of* **Electrically Operated VALVES**

MOTORIZED operation of Valves is a field in itself. When purchasing these relatively expensive and technical units, you will want to feel sure your supplier has had ample experience. Costly mistakes can be and have been made through inexperience.

Rensselaer Valve Company has supplied thousands of such Valves over the course of many years—and covering a wide variety of service conditions.

The services of our Engineering Dept. are at your disposal without obligation.

Shipments are relatively long; you will want to order now for projects next summer.

RENSSELAER VALVE CO.

TROY, N. Y.

Day or night you can count on

One of the three Haiss Snow Loaders owned by The City of Cambridge, Mass.

Haiss Snow Loaders

Haiss snow loaders fill trucks fast, cleaning up congested traffic areas in a few hours.

They are designed for 24-hour operation in very cold weather. Communities which have a big snow removal problem run them day and night. These machines are highly mobile, and get about quickly between working locations under their own power.

Each Haiss snow loader does the work of 80 men, and loads 15 yards a minute. It reduces truck rentals by $200 to $300 or more per 8-hour shift.

Because of the chopping action of the propeller blades, and the positive upward lift of the conveyor scoops, this rugged machine is thoroughly dependable in hard and frozen snow.

Our nearest sales representative will gladly arrange for you to see one in action.

* * *

Haiss is now a wholly-owned subsidiary of Pettibone Mulliken Corporation of Chicago. With new management and much larger resources, Haiss can now do a still better job for its customers... better machines and servicing, larger production, quicker deliveries.

Haiss specializes in equipment to load bulk materials... snow, sand, gravel, stone, coal, top-soil, etc.

Its machines are money-makers for their owners.

GEORGE HAISS MANUFACTURING CO.
140th Street & Park Avenue
New York 51, N. Y.

Kelsey New Vice-President of Builders Iron Foundry

George W. Kelsey, former director and general sales manager of Builders Iron Foundry, Providence, R. I., has been appointed vice-president. Mr. Kelsey is also affiliated with three Builders Iron Foundry subsidiaries: Builders-Providence, Inc., Omega Machine Co., and Builders-Pacific, Inc.

George W. Kelsey

New Fire Extinguishers Increasingly Effective

Two new carbon dioxide fire extinguishers, a 5-pound and a 2½-pound size, replace the 4-pound and 2-pound CD-Sno Fog made by The General Detroit Corp., 2272 E. Jefferson Ave., Detroit 7, Mich., and The General Pacific Corp., 1800 South Hooper St., Los Angeles 21, Calif.

In making the announcement of the apparatus, E. A. Warren, the organization's vice-president in charge of sales of the organizations, pointed out that the new extinguishers are 25% more efficient, yet will be sold at the same price as the mechanism they are replacing. The new extinguishers have been designed to fit in the same wall brackets that were used for their predecessors.

General Detroit's 5- and 2½-pound CD- Sno Fog carbon dioxide fire extinguishers.

Complete specifications of the Sno Fogs in sizes ranging up to the 100-pound wheel units are available from either The General Detroit Corp. or the General Pacific Corp.

Guy Geer Joins Armstrong Associates

Guy Greer, formerly an editor of *Fortune* magazine, has recently joined the firm of Armstrong Associates, appraisers and analysts of real estate, as chief industrial and housing consultant. He is in charge of advisory services on industrial development and on community planning and housing.

Mr. Greer, author of *Your City Tomorrow* (Macmillan, 1947), is an economist and engineer with wide experience in industry and finance as well as in the public service. After having received a degree in mining engineering, he joined the Army in 1917, serving overseas as a lieutenant. For five years after the Armistice, he was on the staff of the Peace Conference and the Reparation Commission. Mr. Greer then spent about two years with the Brookings Institution in Washington, where he wrote *The Ruhr-Lorraine Industrial Problem*. Later, he represented Lee Higginson & Company in Europe, mainly in Germany and France.

In 1942, Mr. Greer joined *Fortune*, where, among other things, he directed the magazine's participation in the community planning project of Syracuse and Onondago County, New York.

In addition to the two books mentioned, he has written extensively for periodicals, mainly on economic and financial subjects and on community planning and housing.

PEERLESS CENTRIFUGAL PUMPS

(Formerly Dayton-Dowd)

PEERLESS PUMPS

Use This Handy Guide to Help You Select the Pump Your Service Requires

Fire Pump

L. P. Gas Pump

PUMP	G.P.M.	DRIVE	HEAD OR PRESS.
TYPE "A"	TO 60,000	ALL FORMS	UP TO 300 FT.

Applications: Designed for general service water pumping in a variety of industries. Embodies most advanced design for efficient, continuous duty applications.

TYPE "B"	TO 1,000	ALL FORMS	UP TO 700 LBS.

Applications: Designed particularly for medium capacity, high pressure boiler feed, oil refinery and pipe line service. Multi-stage, split case construction.

TYPE "AF"	TO 2,000	ALL FORMS	UP TO 125 LBS.

Applications: Peerless Fire Pumps (formerly Dayton-Dowd) are the foremost in fire pumps. Embodying latest developments, their selection assures low cost, modern, plant fire protection. Underwriter's approved.

TYPE "CO"	TO 1,000	ALL FORMS	UP TO 200 LBS.

Applications: Especially developed for chemical, refinery, paper mill, food and process industries. Designed to handle acids, black liquors, hot oil, caustics, etc.

TYPE "TU"	TO 2,500	ALL FORMS	UP TO 600 FT.

Applications: For general water pumping services including oil refinery, boiler feed and mining, where development of heads above the range of conventional single stage pumps is desired.

PEERLESS PUMP DIVISION

Food Machinery Corporation

Factories: Canton 6, Ohio Quincy, Illinois Los Angeles 31, California

District Offices: Canton 2, Ohio; Ardmore, Pa.; Decatur, Ga.; Dallas 1, Texas

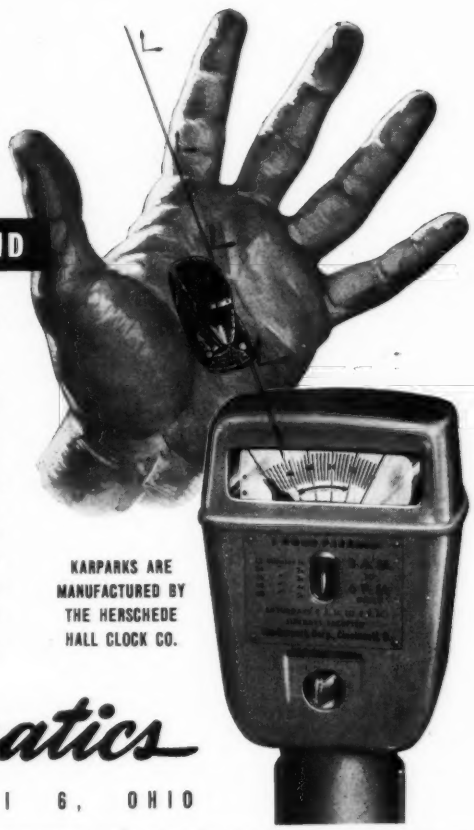
Distributors in Principal Cities

KARPARK

KEEPS PARKING PROBLEMS IN HAND

City after city has found the answer to parking control—with dependable KARPARK.

Extra strong and rugged, yet made with the precision construction of a fine clock, KARPARK operates steadily and reliably in any kind of weather. Routine servicing takes little time or trouble. Motorists like its easy, automatic operation. Traffic officers find that its full flag visibility simplifies enforcement. Small wonder that even increased production lags behind demand. With no manufacturing short cuts or use of substitute materials, it takes a little longer to get KARPARKS, but there is lasting satisfaction in the end. Look ahead by writing for full information now.



KARPARKS ARE MANUFACTURED BY THE HERSCHEDE HALL CLOCK CO.

KARPARK *Automatics*

KARPARK CORPORATION, CINCINNATI 6, OHIO

THE WISE CHOICE

"REDI-MIX" *Special Zone and Traffic Line Paint*

INDUSTRIAL • MUNICIPAL • HIGHWAY

No Guesswork • No Valuable Loss of Time

"Redi-Mix" is ready to use in all types of traffic line markers as it comes in the container. It will not "pick-up" 20 minutes after application, in warm weather. Comparative tests justify the remarkable resistance of this traffic paint to abusive weather and traffic conditions.

Available in White or Yellow colors.
No delay in deliveries.

Write for prices and information.

A. J. SCHMIDT CO. **Kiel, Wisconsin**

The "Quinn Standard"

FOR CONCRETE PIPE

The Quinn Standard is known as the best the world over, wherever concrete pipe is produced and used. Backed by over 30 years' service in the hands of hundreds of Quinn-educated contractors, municipal departments and pipe manufacturers who know from experience that **Quinn pipe forms** and **Quinn mixing formulas** combine to produce the finest concrete pipe at lowest cost.

Quinn Heavy Duty Pipe Forms

For making pipe by hand methods by either the wet or semi-dry processes. Built to give more years of service—sizes for any diameter pipe from 12 to 84 inches—tongue and groove or bell end pipe—any length.

WRITE TODAY

Complete information, prices and estimates sent on request. Also manufacturers of Quinn Concrete Pipe Machines.

QUINN WIRE & IRON WORKS 1623 12th ST. BOONE, IA.

A profound and startling book on community planning by PERCIVAL and PAUL GOODMAN

authors of the MASTER PLAN FOR NEW YORK

COMMUNITAS

MEANS OF LIVELIHOOD AND WAYS OF LIFE

• These two distinguished brothers—an architect and a poet—explore the city planning of the last hundred years, and draw up their own models to relate the way man works and lives to his hopes and desires. An extraordinary book, clothing expert knowledge and brilliant reasoning in whimsy and Swiftian satire.

With 117 illustrations which are in themselves a discerning commentary on life, architecture, and art.

Size 11" x 8½", $7.50

At all bookstores

THE UNIVERSITY OF CHICAGO PRESS
5750 Ellis Ave.,
Chicago 37, Ill.

Worthington Pump Elects Williams Vice-President

S. Riley Williams, of the Worthington Pump and Machinery Corp., Harrison, N. J., was elected vice-president in charge of foreign business at the January meeting of the board of directors.

S. Riley Williams

Mr. Williams joined the Worthington organization in 1920, following his release from the Army, in which he served during World War I. Until 1941, he was managing director in Spain and France and later was made general European manager. In 1941, he returned to the United States and served as assistant to the vice-president in charge of operations. In May 1945, he was appointed director of international business.

In his new capacity, Williams will administer the Worthington Associated Companies in South America and Europe. He will make his headquarters at the Worthington Home Office in Harrison, N. J.

Bailey Engineer Gives Pointers on Smoke Control

Pointing to the undesirability of smoke from an economic standpoint as well as from a cleanliness and nuisance viewpoint, P. S. Dickey, chief engineer, Bailey Meter Co., Cleveland, Ohio, in a paper recently presented before the American Society of Mechanical Engineers, reported some interesting sidelights on the various phases of smoke control.

Mr. Dickey stated that with an efficient system of boiler control, coordinated to maintain fuel feed, air flow, and furnace draft at the correct values, it is possible to operate properly designed furnaces with little, if any, smoke. He said that increasing consciousness of the smoke and fly ash nuisance is a contributing factor to the demand for boiler and furnace control. One of the functions of control is to keep the smoke and fly ash at a minimum.

Mr. Dickey also said that firemen can contribute immensely to the problem of smoke control. An intelligent, well-trained fireman can operate a furnace in such a manner that no smoke will appear even though automatic control is not in use. However, this is not recommended as there is a tendency to use an excessive amount of air, thereby not obtaining the maximum heat recovery from the fuel.

NOW YOU CAN SPECIFY A BUMPLESS HIGHWAY

THE ORIGINAL Para-Plastic REG. U. S. PAT. OFF. HOT-POURED RUBBER SEAL

PARA-PLASTIC remains flexible all year 'round. Its elasticity is permanent in any temperature without breaking its bond with concrete.

PARA-PLASTIC maintains a positive and permanent seal in any temperature against the infiltration of water.

•

"STICK" WITH THE ORIGINAL ALL YEAR 'ROUND!

•

PARA-PLASTIC is the ORIGINAL hot-poured top seal for concrete expansion joints.

PARA-PLASTIC pours smoothly and uniformly at a low pouring point.

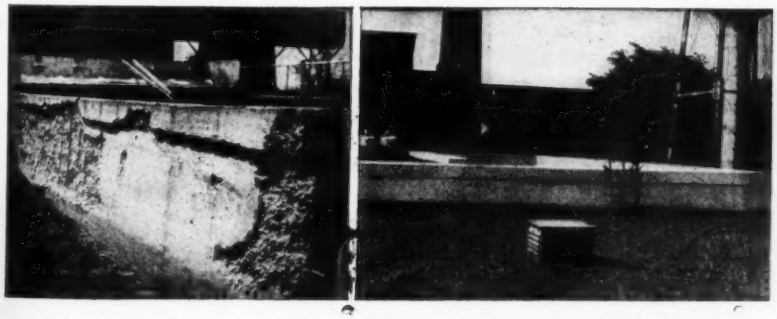
Millions of pounds of PARA-PLASTIC have been used by contractors throughout the country.

Write for further technical information

PARA-PLASTIC is specified by State Highway Departments and Army and Navy Engineers.

SERVICISED PRODUCTS CORP.
6051 West 65th Street Chicago 38 Ill.

CEMENT GUN COMPANY
"GUNITE" CONTRACTORS
GENERAL OFFICES—ALLENTOWN, PENNA., U.S.A.



"GUNITE" SAVES COMPLETE REBUILDING

The above are "before" and "after" photographs of a sedimentation basin at the water works of the City of Batavia, New York, which was restored by us in May, 1944, under the direction of Mr. Fred F. Gordon, Consulting Engineer.

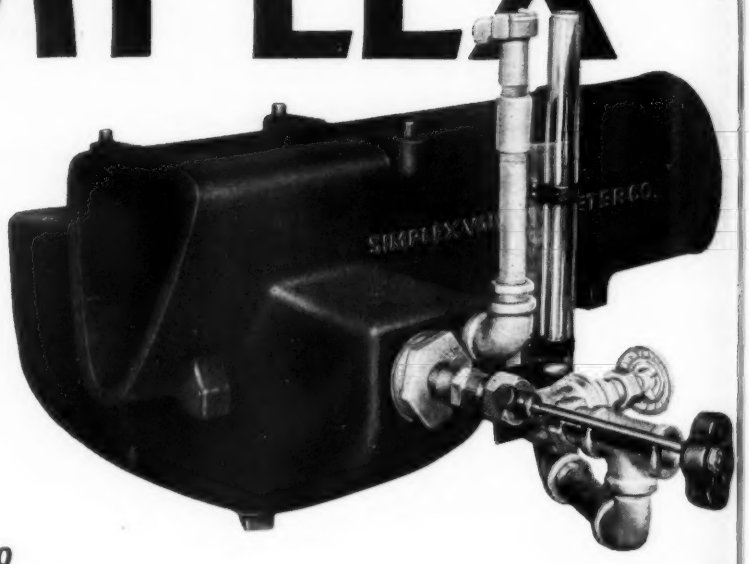
As shown to the left, the original concrete walls of this basin were badly deteriorated. All disintegrated concrete was chipped out to a solid surface and reinforcing mesh bolted in place. An average of more than two inches of "GUNITE" was placed on the inside and outside of the walls. The filter beds at the same plant were similarly restored.

Our Bulletin D2300 describes scores of cases where "GUNITE" has saved failing concrete structures of every description, together with numerous other applications for both repair and new construction. A simple request will bring you a copy, without obligation.

MANUFACTURERS OF THE "CEMENT GUN"

SIMPLEX

TYPE-S PARABOLIC FLUME



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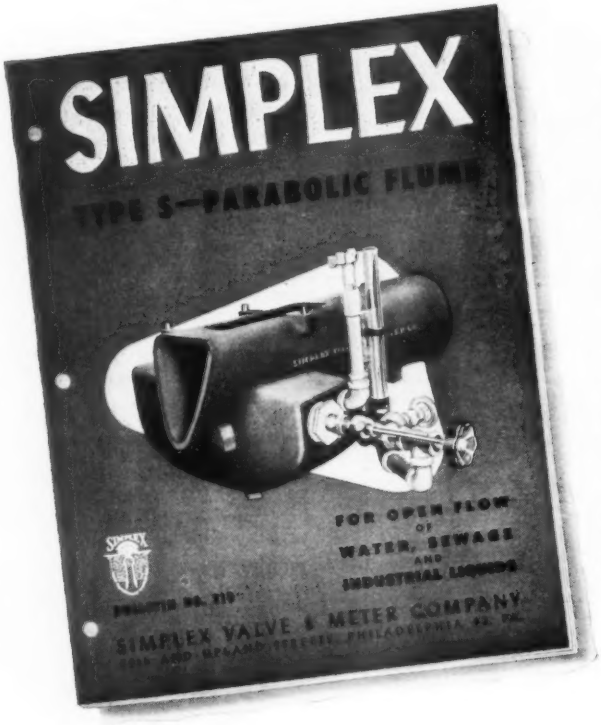


For open flow of water, sewage, and industrial liquids

WRITE TODAY FOR YOUR COPY OF SIMPLEX BULLETIN 210 describing the operation, installation and capacity of the new SIMPLEX Type–S Parabolic flume. Contains necessary detailed data for design and specification purposes. Address inquiries to Dept. 303.

SIMPLEX VALVE & METER COMPANY
68th AND UPLAND STREETS, PHILADELPHIA 42, PA.

C. of C. Award to Leeds & Northrup

First annual Industrial Relations Award of the Philadelphia, Pa., Chamber of Commerce and Board of Trade was given to Leeds & Northrup Co., makers of electrical measuring instruments and heat-treating furnaces, at a dinner at the Bellevue-Stratford on January 15.

The award, a silver plaque, was made by William L. Batt, president of SKF Industries, to Charles S. Redding, president of Leeds & Northrup. In his presentation speech, Mr. Batt said:

"We're here to pay tribute to a long-established Philadelphia firm which has not only developed for itself a national reputation for fine workmanship but is also acknowledged as an outstanding example of excellent industrial relations . . . two matters, which of necessity, go hand in hand."

The presentation was made at the close of the first annual two-day Industrial Relations and Production Conference sponsored by the Chamber of Commerce and Board of Trade, its Industrial Relations Council, and cooperating organizations.

William L. Batt (right), president of SKF Industries, presents Philadelphia Chamber of Commerce's First Annual Industrial Relations Award to Charles S. Redding, president of Leeds & Northrup Co., on behalf of that company.

"It is because the Leeds & Northrup Company has developed and maintained for the nearly fifty years of its existence one of this country's best industrial relations programs," Clement V. Conole, general manager of the Chamber, said, "that we have chosen them to be the recipient of our first award. In our opinion, the over-all and complete effectiveness of a sound industrial relations formula can permeate a business establishment only when it is generated from top management. This is precisely the case in the Leeds & Northrup Co. Charles. S. Redding, president, and his predecessor, Morris E. Leeds, founder and chairman of the board, as well as their associates, are of the firm conviction that business exists for man, rather than man for business.

"As a result they have effectuated and expanded a progressive philosophy of social justice, which Mr. Leeds, with solid Quaker practicality, introduced into the business when he founded it in 1899. Many liberal policies reflecting the social responsibilty of management have long been established in the organization. Profit-sharing, employe stock ownership, and cooperative councils for labor and management have created within the company a unique spirit of friendly cooperation."

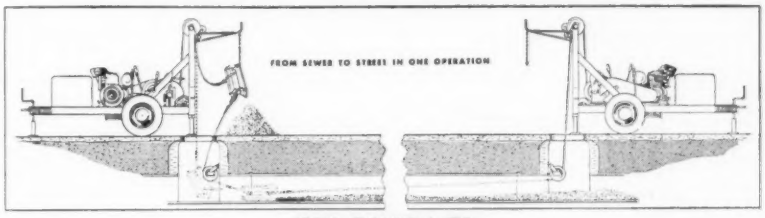
It was revealed that the award committee's attention had recently been particularly drawn to Leeds & Northrup by a party the company gave on November 16, when more than 2,000 employes sat down to a five-course turkey dinner and Mr. Redding gave a detailed recital of the firm's finances for the last fiscal year, including distribution of profits.

In a foreword to a handbook for employes published by the company, Mr. Redding writes: "The present management, and, it is hoped, succeeding managements, will consider the welfare of the company's employes a major responsibility. Our goal has been expressed by Mr. Leeds as follows: 'A business organization should be a unified group of people banded together to earn a living for its members, seeking to do justice among all of them and to the rest of the world.'"

Industrial relations in the company are the direct responsibility of the vice-president.

OVERLOADED SEWERS?

MANY CITIES ARE NOW PLANNING ON CLEANING, TO DETERMINE THE CAPACITY BEFORE INCREASING LINES



"FLEXIBLE"

POWER BUCKET MACHINES

Have SPEED, POWER and PORTABILITY, Special Alloys, Tempering and Bearings

WRITE TODAY—NEW COMPLETE "FLEXIBLE" CATALOG

FLEXIBLE SEWER-ROD EQUIPMENT CO.

9059 Venice Blvd., Los Angeles, California

855 Board of Trade Bldg. Chicago 4, Ill.
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GOOD SIGNS THAT NEVER FAIL.

Warnings That Work DAY and NIGHT

Proper and unmistakable warnings are appreciated by the motoring public. Miro-Flex produces the full line in definite specification signs — plain embossed with glass or Stimsonite reflectors. Bonderized sheets with baked enamel to give years of service.

Write for Catalog

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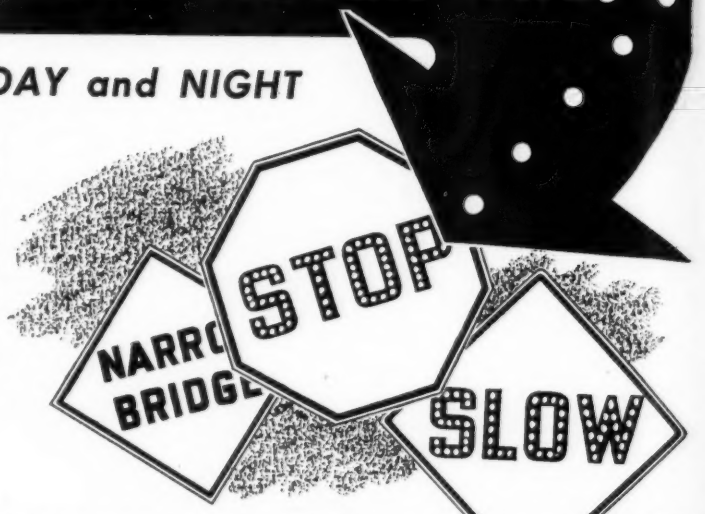


MANUFACTURED BY

MIRO-FLEX COMPANY

1824 EAST SECOND STREET • WICHITA, KANSAS

HELD-UP ORDERS HOLD UP IMPROVEMENTS
City employee wages are too high to brook any slow-downs because of delays in receiving Hydrants, Drinking Fountains and Hose Boxes.
Keep your summer improvement program stepping along by having your Purchasing Department step along now in the matter of issuing orders.
We want to please you as much as you want to be pleased. Write us today about your delivery requirements.
The Murdock Mfg. & Sup. Co.
426 Plum St. Cincinnati 2, Ohio
MURDOCK
OUTDOOR DRINKING FOUNTAIN
ANTI-FREEZING COMPRESSION HYDRANT
LARGE ANTI-FREEZING HYDRANTS 10" TO 2" INCLUSIVE
SELF-CLOSING ANTI-FREEZING HYDRANT
"LOCK-LID" STREET WASHERS 3/4" and 1" SIZES

Broggi Promoted by Neptune

Dante E. Broggi, vice-president and director of the Neptune Meter Co., 50 West 50 St., New York, N. Y., has been appointed general manager of production, sales, and research, according to a recent announcement. A graduate of City College of New York, he began work for the company as a chemist and metallurgist in 1920 and later was promoted by successive steps to the position of factory manager.

Dante E. Broggi

Mr. Broggi is a member of the American Foundrymen's Association and an authority on bronze castings.

Koehring Holds Second Sales Training Courses

Anticipating the day when competitive selling will again be part of the construction equipment field, Koehring Co., Milwaukee, Wis., held during January the second of a series of training courses designed to supply Koehring distributor salesmen with complete, up-to-date sales information on its products.

Approximately thirty-five men, representing Koehring distributors throughout the country, attended the ten-day refresher course, which combined lectures by members of the Koehring sales, engineering, and management staffs with discussions and question-and-answer periods. Lectures were illustrated with slides, working models and movies, and covered the Koehring line of excavators, pavers, Dumptors, construction mixers, mudjacks, longitudinal finishers, Kwik-Mix Dandie concrete, and bituminous and plaster-mortar mixers.

Arthur E. Loder, veteran salesman and Washington representative for the company during the war, headed a staff of twenty-five lecturers that included G. E. Long, president; J. R. Steelman, R. A. Beckwith, vice-presidents; J. F. Robbins, Koehring sales manager; A. E. Kelbe, sales-manager, Kwik-Mix Co.

Chain Belt Co. Appoints A. K. Thomas

Austin K. Thomas, formerly Eastern district manager of the Chain Belt Co., Milwaukee, Wis., has been appointed sales manager of its Construction Machinery Division. Thomas has a background of over twenty years' association with the construction machinery industry. He spent several years in active construction work following his graduation from the College of Civil Engineering of Cornell University.

Austin K. Thomas

James Galloway Dies

James H. Gallaway, district manager for the Heavy Machinery Division of Nordberg Mfg. Co., Milwaukee 7, Wis., passed away February 23rd.

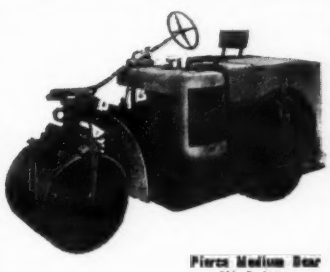
For more than ten years, Mr. Gallaway has represented Nordberg in the sale of diesel engines in the middle west, with headquarters at Kansas City, Mo.

Recently he returned to Kansas City, Mo., to re-open an office which had been temporarily closed during the war, at which time he had been transferred to the main office in Milwaukee and engaged in diesel work associated with the war.

A Roller For Every Job

Sturdy, heavy-duty rollers, engineered to stand up under the toughest conditions. Pierce-Bear Tandem Rollers are powered by economical Allis-Chalmers 4-cylinder industrial type gasoline engines. Variable weights, from 3½ to 5 tons with built-in water tanks for ballast and wet rolling.

Pierce Baby Bear
2½-3 tons



Pierce Medium Bear
3½-5 tons

The new 2½-3-ton Pierce Baby Bear is designed for close-in work and small area maintenance. It works against a curb up to 25 inches high and within 1½ inches of a higher wall or building. Final drive is within the rear roll. Use Pierce-Bear Tandem Rollers for all-around performance. Write for folder.

Pierce-Bear Rollers

Lewis Manufacturing Co.

415 Hoefgen Ave.—San Antonio 6, Tex.

Locate Underground Leaks

without any digging . . .

with a

GEOPHONE

(Reg. U. S. Pat. Off.)

The original leak locator of the Geophone type

Placed in contact with earth, the GEOPHONE accurately detects, by sound, the position of leaks in underground water or steam pipes.

Leaks are too costly to be ignored. A pin-point size leak wastes 65,000 gallons of water annually!

A GEOPHONE saves the cost of locating leaks—saves the costs of surveys, excavating, replacing. A big paying investment for water, sewerage and Public Works Departments; for any plant with underground water or steam pipes.

Outfit complete with two GEOPHONES, connecing tubes, earphones, in heavy leather carrying case with shoulder straps. ...$75

Pipe Finders, $100.00; Dipping Needles, $18.50; Pipe Phones, $3.70.

Write at once to

Globe Phone Mfg. Corp.

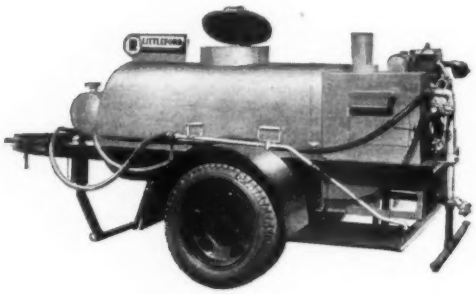
Dept. A., Reading, Mass.

Manufacturers of the Geophone Since 1918

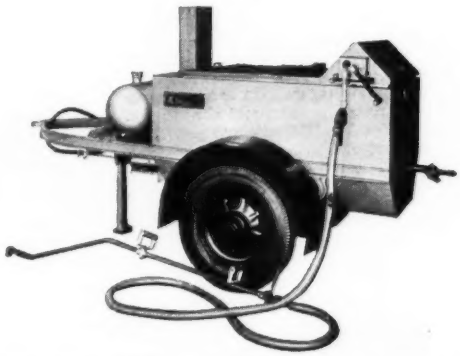
A Patch in Time Saves Nine . . .

USE LITTLEFORD FOR ROAD REPAIRS

Holes in black top are as inevitable as winter, and the best and cheapest way is to get on them quickly with the finest repair equipment anywhere available—Littleford. Put Littleford's Trail-O-Roller on patch work and the holes will soon disappear. For this compact little number is motorized and portable, converts from rolling to traveling, or back, in two minutes; trails as fast as you drive a truck; compaction as great as five ton tandem! *There's* efficiency! Combine that with Littleford heating Kettle and 101 Utility Spray Tank, and you're ready for the toughest road job that winter can throw at anybody!



Littleford 101 Utility Spray Tank is combination of three units: Spray bar for spraying, hand spray for patch work, pouring pot outlet for filling cracks.



Littleford 84-HD is fastest heating kettle made; double heat circulation and screened reservoir. These patented features give fast, efficient, economical operation.

LB BLACK TOP ROAD MAINTENANCE EQUIPMENT SINCE · 1900

LITTLEFORD

LITTLEFORD BROS., Inc.

500 E. PEARL ST., CINCINNATI 2, OHIO

Cleveland Rock Drill Co.

The purchase of the Cleveland Rock Drill Co. of Cleveland, Ohio, a division of The Cleveland Pneumatic Tool Co., has been announced by by the Le Roi Co., Milwaukee, Wis. All the manufacturing rights were included in the purchase.

R. R. Morgan

Russ Morgan, formerly secretary and sales manager of The Cleveland Rock Drill Co., who joined Le Roi over a year ago, and who was instrumental in the organization of Le Roi's Cleveland Division, will head the expanded facilities. John M. Dolan, vice-president in charge of sales, will head the integration of sales activities of all Le Roi products.

Manufacture of Le Roi - Cleveland products, initially carried on without interruption and at an accelerated rate at the Cleveland Pneumatic plant, has been transferred to Le Roi's new and modern Cleveland Division plant.

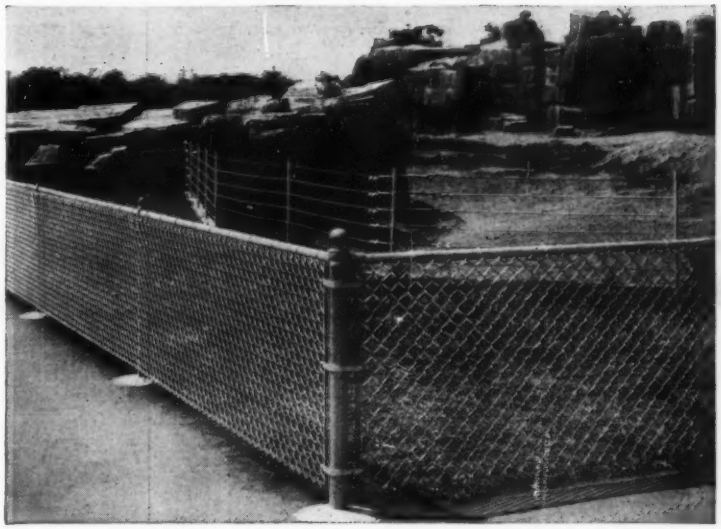
SAFETY LUGS FOR COVERS

This worm's-eye view of a Ford Meter Box Cover shows not only the Ford Worm Lock but also two of the three safety lugs provided on all lids. These tend to prevent the lid being kicked off if left unlocked.

Ford Meter Box Covers are made in single and double-lid types, in sizes for 15", 18", 20" and 21" meter box barrels and with various sizes of top lids. Over a million in service.

Write for interesting and useful catalog.

The FORD METER BOX COMPANY, INC.
Wabash, Indiana



The best protected projects start with CYCLONE FENCE

WHEN you put Cyclone Chain Link Fence in your original plans, you are providing the finest protection obtainable for both your project and the public.

Cyclone provides greater weather-resistance through the years, because its copper-steel fabric is galvanized *after* weaving. It stays taut and true throughout its length, because its framework is specially designed to withstand heavy stresses. And every foot of fence is put there to *stay*, by Cyclone factory-trained crews.

Whatever your immediate project, there's a type of Cyclone Fence to fit the job. Why not ask one of our engineers to assist you in choosing the right type of fence and in making estimates? There's no obligation for this service.

CYCLONE FENCE DIVISION
(AMERICAN STEEL & WIRE COMPANY)
Waukegan, Ill. • *Branches in Principal Cities*
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Send for FREE 32-Page Book. Profusely illustrated. Full of facts and specifications. Complete information on different types of fence, gates, athletic field equipment, etc. Just mail the coupon.

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Waukegan, Ill., DEPT. B-37

Please send me, free of charge, your 32-page book on Fence.

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Address.....

City..... State.....

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UNITED STATES STEEL

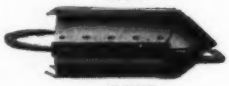
HAND
STORAGE BATTERIES
FOR MUNICIPALITIES

HAND storage batteries are heavy-duty batteries provided with heavy, hand-pasted tank-formed plates, heavy glass mats, acid and heat resisting micro-porous rubber separators, splash decks and genuine hard rubber containers. Built for use in Police Radio cars, Sanitation trucks, snow plows, sweepers, emergency trucks, ambulances, and fire apparatus.

The Hand Laboratory, Nyack, N. Y.

KEEP SEWERS OPEN
with
OK CHAMPION
POWER SEWER CLEANER

OPEN



CLOSED

Town and City officials throughout America are adopting OK CHAMPION Power Sewer Cleaner to keep sewers clean and efficient. Takes roots, dirt, sand, and other debris up from main in one continuous operation. All men work above street level.

Pulling forward opens the jaws that bite into obstructions. Reversing the pull on the bucket automatically closes jaws which hold load pulled back to street level. Write for complete details.

CHAMPION CORPORATION 4716 SHEFFIELD HAMMOND, IND.

MANAGEMENT INFORMATION SERVICE

Available to Cities and Towns on Subscription Basis

It Includes

1. Prompt replies to specific inquiries on management problems
2. Copies of replies to inquiries from other cities
3. Subscriptions to monthly journal PUBLIC MANAGEMENT
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How It Works

A city has a management problem—needs technical advice—contacts MIS—receives prompt reply—city thereby aided in reaching best solution.

What It Costs

Subscription fee varies with size of city from $20 for under 5,000 to $400 for cities from 250,000 to 500,000 population. Over 500,000—on application.

MIS is now serving more than 200 cities ranging in size from 1,000 to 400,000. For more details and fee for your city write:

The International City Managers' Association

1313 East 60th Street **Chicago 37, Ill.**

Mack Elects New Director

A. C. Fetzer, vice-president of the Mack Manufacturing Corp., Empire State Bldg., New York City, has been elected to the board of directors of the company.

A. C. Fetzer

Mr. Fetzer, who was acting general sales manager, was also appointed general sales manager. He will have his offices at the New York address of the organization.

The company also announced the appointment of Leonard E. Matzner as advertising manager. Mr. Matzner has been serving the company in the capacity of assistant advertising manager since his return from active duty in the Pacific theater.

Leonard E. Matzner

Bailey Meter Co. Expands Field Force

As a result of the unprecedented demands for trained meter and control engineers since the inception of the reconversion program, Bailey Meter Co., Cleveland, Ohio, is expanding its staff of field engineers. Fourteen former servicemen and marine engineers are now in the company's Cleveland factory taking a six-month course, a prerequisite for all Bailey engineers.

The training program includes a comprehensive study of combustion and automatic control problems applicable to power plants and industrial processes. At the completion of the course, the students will join the Bailey field staff, consisting of approximately ninety engineers in over thirty locations throughout the U. S. and Canada.

R. E. Sprenkle, director of education, is in charge of the cadet training course. He is assisted by J. H. Dennis, assistant director, and by a staff of experienced engineers and factory specialists.

Okonite Makes Personnel Changes

R. S. Keefer, former sales manager of The Okonite Co., Passaic, N. J., manufacturers of electrical wires and cables, has been appointed vice-president in charge of sales. He will be responsible for directing all sales activities of Okonite and its Hazard Insulated Wire Works Division, as well as those of its affiliate, the Okonite-Callender Cable Co., Inc.

R. S. Keefer

Also, F. E. Bankwitz has been appointed manager of Okonite's Washington office, 550 Munsey Bldg., 1329 E St. NW, to replace R. Soutter, who has been granted a leave of absence.

D. W. Nurse, formerly of the San Francisco office, has become manager of the Portland office of The Okonite Company, 907 Terminal Sales Bldg., 1220 S. W. Morrison St.

W. R. Van Steenburgh has been named manager of Okonite's New York territory, with headquarters at 501 Fifth Ave., New York 17, N. Y. This appointment is in addition to his duties as manager of the company's light and power department.

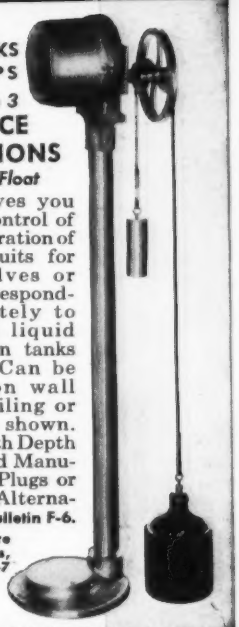
FLOATROL

For OPEN TANKS and SUMPS

Controls 1 to 3 SEQUENCE OPERATIONS From ONE Float

Floatrol gives you automatic control of sequence operation of 1 to 3 circuits for pumps, valves or alarms, corresponding accurately to changes in liquid level in open tanks or sumps. Can be mounted on wall bracket, ceiling or pedestal as shown. Available with Depth Indicator and Manual Transfer Plugs or Automatic Alternator. Ask for Bulletin F-6.

For control of more than three circuits, ask for Bulletin S-7 on SELECTROL.



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1015 University Ave., St. Paul 4, Minn.

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Fresh, high quality broom fibres last longer

The longer mileage you obtain from fresh broom fibres means less time-taking refilling of the broom core and valuable man-hours put to an extra use. The use of fresh, high-quality fibres in your mechanical sweeper is sound economy these days.

AFRICAN BASS FIBRES

INDIA PALMYRAH STALKS

MOUNTAIN HICKORY SPLINTS

STEEL WIRE SWEEPER STALKS

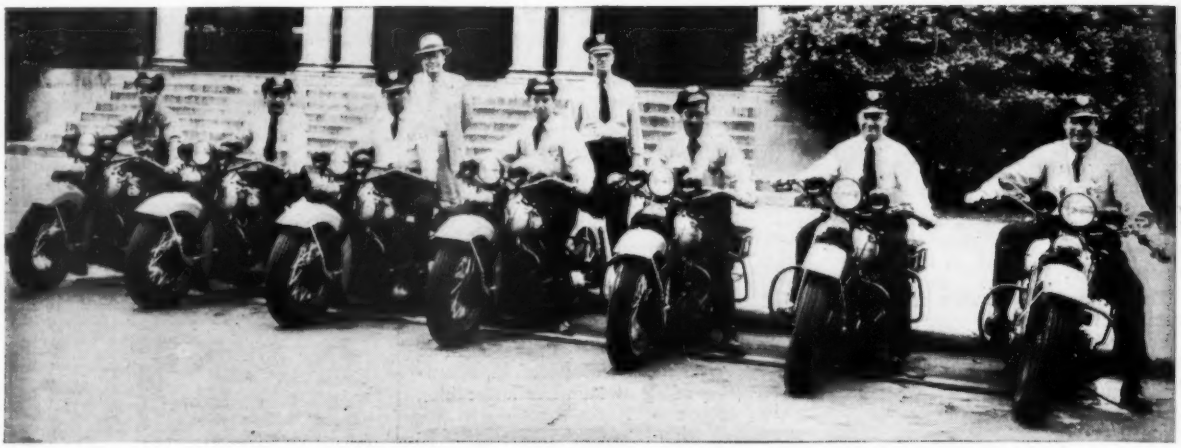
We are able to service every need in all types and sizes. We would be happy to receive your request for samples and quotations.

The OTTO GERDAU CO.

Established 1872

82 Wall Street, New York 5, N. Y.

BATON ROUGE Motorcycle Squad Uses HARLEY-DAVIDSONS

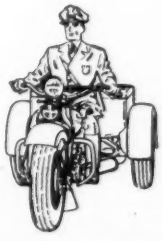


Police Chief Fred C. Parker, Jr., of Baton Rouge, La., can well be proud of this squad with its seven Harley-Davidsons. Shown from left to right are Harold Deffez, James Blanchard, Tony St. Angelo, Chief Parker, Macy Ulmer, Captain Tony Longo, Frank Polozola, Roger Melancon and Julian Rogillio.

HARLEY-DAVIDSON MOTORCYCLES
For More Efficient Traffic Control
Make Accident Prevention More Effective

Traffic accidents don't "just happen" — they are *caused.* The "cause" is much the same in cities of every size — *driver carelessness, over-age cars and trucks,* plus the mental and physical hazards of today's increased traffic. And the solution of the problem is much the same, no matter how large or small your city — *deal with accidents before they occur.* This calls for careful planning — and utilizing police manpower to the fullest extent through most practical, flexible and efficient methods of traffic control. Meet YOUR increased traffic problems with Harley-Davidsons — no other method can match motorcycles in coping with accidents and reducing the toll of injuries and deaths. Call in your Harley-Davidson dealer today—get complete information regarding the superiority and many advantages of Harley-Davidson Police Motorcycles and high utility, all-purpose Servi-Cars.

HARLEY-DAVIDSON MOTOR COMPANY • Milwaukee 1, Wisconsin



HARLEY-DAVIDSON
Police Motorcycles

Marbelite Rounds Out Traffic Signal Line

Charles C. Lenz, President of the Marbelite Co.

Purchase of the Traffic Signal Division of the Horni Signal Mfg. Corp. by The Marbelite Co., 26 Warren St., New York, N. Y., is announced by Charles C. Lenz, president of Marbelite. The complete division was moved to the New York City and Bridgeport, Conn. plants.

In November 1945, The Marbelite Co. acquired the Traffic Signal and Electrical Div. of the Signal Service Corp., Elizabeth and Irvington, N. J. With this addition the company is in a position to manufacture and furnish traffic signals and controllers of every type and specification.

Mr. Lenz is also president of the Atlas Safety Equipment Co., Inc., 26 Warren St., New York, N. Y., which manufactures the Atlas Life Saving Net, used extensively by fire departments throughout the world.

Rockwell Makes Appointments

Three appointments to the executive staff of the Rockwell Mfg. Co., Pittsburgh, Pa., have been announced.

C. A. Wiken, formerly chief engineer of the Delta Mfg. Division in Milwaukee, has been promoted to the position of vice-president in charge of engineering. He will coordinate the engineering activities of the various divisions and subsidiaries.

J. E. Ashman has been named controller. He came to the Rockwell organization after four years with United States Steel as director of procedure for Carnegie-Illinois Steel Corp. and thirteen years as National Enterprises representative for the Burroughs Adding Machine Co.

A. E. McIntyre, who for the past several years has been manager of the Nordstrom Valve Division plant in Oakland, Calif., has been transferred to Pittsburgh.

CIRCUL-AIR
FIRE HOSE DRYER
- Is easier to use
- Saves drying time
- Reduces hose stretch
- Prevents mildew and rot
- Improves building design
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NIAGARA *for Hard Water*
AMERICAN *for Soft Water*

● Hard water acts like an electrolyte. A galvanic action occurs when iron and a copper alloy are both used in a water meter measuring hard water. Minute currents flow from the bronze working parts to the iron case. This action minimizes corrosion of working parts. If deposits occur, they tend to form on the casing where they do no harm.

In most types of hard water, the Niagara galvanized iron case meter is usually recommended. In softer water where the pH is below approximately 7.5, and for most water obtained from surface sources, the American with bronze case is commonly specified.

50 years' experience proves that both models are necessary and each has its proper place.

Send for literature on the design of Niagara, the successful galvanized iron case meter.

AMERICAN BRONZE CASE
NIAGARA GALV. IRON CASE
WATER METERS
BUFFALO METER COMPANY
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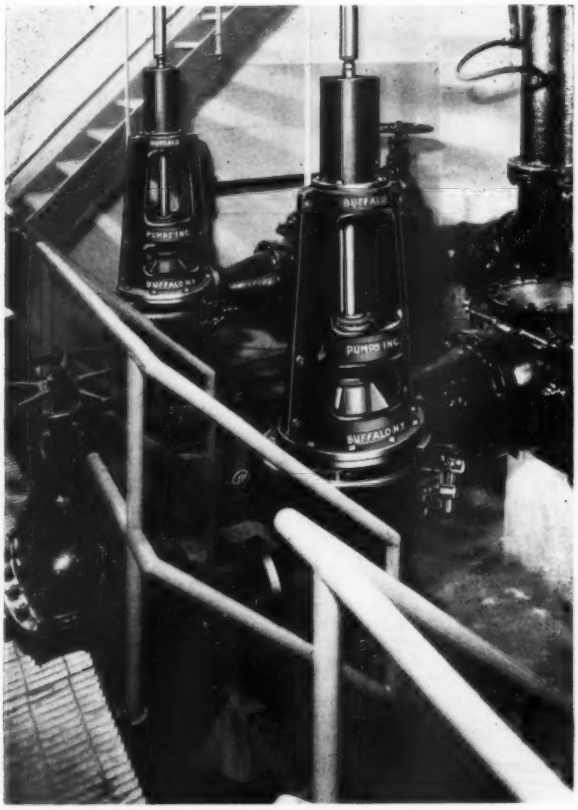
Simplicity



To keep your plant MODERN ~

Sewage engineers know that up-to-date equipment costs less to install, less to operate, less to maintain.

Buffalo Non-Clogging Raw Sewage Pumps are available in vertical and horizontal solid shell types, horizontal diagonally-split shell models, and self-priming horizontal pumps—all designed by engineers with years of experience in sewage work. They are modern in design and efficiency.

Ask for Bulletin 964-D which gives complete data.

Buffalo Pumps Inc.
490 Broadway Buffalo 5, New York
Canada Pumps, Ltd., Kitchener, Ont.

Specify

"Buffalo" SEWAGE PUMPS

THE BEST NON-CORROSIVE AND ANTI-RUST COATING IN THE WORLD WILL FAIL UNLESS PROPERLY APPLIED

AS NATIONALLY APPROVED APPLICATORS OF SUCH MATERIALS AS ***NO-OX-ID, BARRETT*** AND OTHER COATINGS WE COMBINE CRAFTSMANSHIP AND PRODUCT TO INSURE MAXIMUM PROTECTION ON—

STEEL STAND PIPES
ELEVATED WATER TANKS
WATER MAINS
PENSTOCKS
LOCK GATES
OTHER WATER WORKS INSTALLATIONS

BUILDING INSTALLATIONS

WHERE SURFACE OF PRESSURE AND GRAVITY TANKS, COOLING TOWERS, DEHUMIDIFIERS, AIR CONDITIONERS, ETC., REQUIRE TREATMENT OUR SERVICES ARE AVAILABLE.

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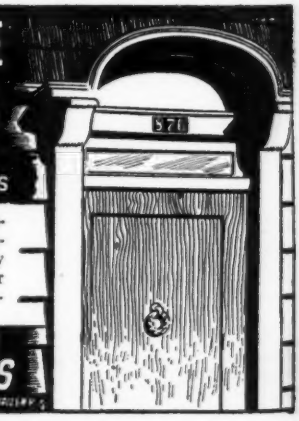
PROPER HOUSE NUMBERING

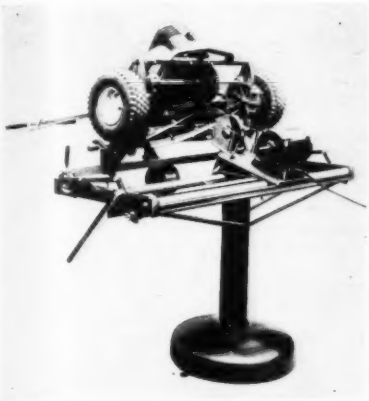
ADOPTED BY MUNICIPALITIES

Premax Stamped and Embossed Metal House Numbers have been generally approved because of their extreme legibility and permanence.



Premax Products

Lawn Mower Sharpener



Modern's new lawn-mower sharpener speeds sharpening of hand- or power-operated lawn mowers since it eliminates the need for removing handles, wheels, rollers or motors.

Hand-or power-operated lawn mowers can now be sharpened and back in service within ten to twenty minutes without removing handles, rollers, wheels, or motors, through the use of the Modern lawn mower sharpener.

The Modern Manufacturing Co., Pasadena, Calif., manufacturer of this sharpener, states that it is capable of grinding hand-mower reel - blades and bottom - knife to precision sharpness in ten minutes. Further, this machine sharpens power-mowers up to 36 inches in size in twenty minutes, as compared to the usual one to three hours required with sharpeners where handle and motor must be removed. No hand filing is needed, since the Modern sharpener grinds either right- or left-twist reel - blades clear to the ends. The bottom-knife is sharpened without extra attachments by placing it in the same brackets as the mower. Thus, both reel-blade and bottom-knife are sharpened parallel from end to end, giving them a scissor-like action. Any desired bevel can be obtained by a turn of the elevating crank.

Barber-Greene Appoints Smith, Inc., for North Dakota Sales

The Barber-Greene Co., Aurora, Ill., has appointed Smith, Inc., Fargo, N. D., as exclusive distributor in North Dakota for the Barber-Greene Construction and Industrial Divisions.

Barber - Greene products being handled by the firm include bituminous mixing and paving machines, portable bulk material loaders, snow loaders, ditchers, portable and permanent belt conveyors, crushers, and coal-handling equipment for retail and industrial use.

This appointment provides complete facilities for sales, service, and repairs at the company headquarters in Fargo.

THE WORLD'S LOUDEST LOUDSPEAKER

Vocal-Aire

Coverage and economy are the standards to which we work. By a simple new principle we make a 20-watt amplifier do a big job; two of them cover the Yale Bowl. One mounted on a tug plying the Ohio talks to lockmasters 2½ miles ahead, saving hours every trip. Two cover ¾ mile of an Atlantic beach and boardwalk and lifeguards can be heard over the roar of the surf and the blare of music. VOCAL-AIRE really does a job. The installation is easy, the maintenance low. Don't confuse it with an ordinary public address system; VOCAL-AIRE *is* different.

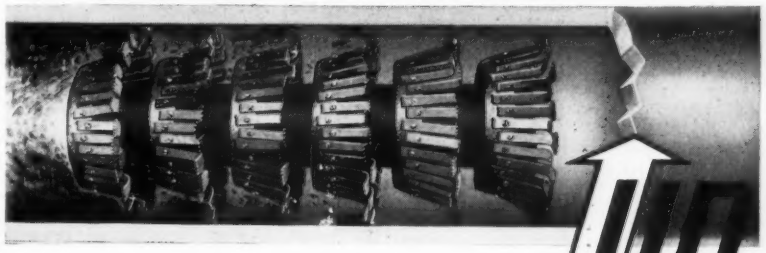
Designed to cover large outdoor areas or to direct activities at distances up to a mile . . .

It may be a stadium, a terminal, a construction project, a race track . . . but if you want to be heard clearly and distinctly . . . and without bulky amplifying equipment . . . well then, VOCAL-AIRE is what you need.

May we tell you more about it? An illustrated folder is yours on request.

DILKS, Inc. NORWALK CONNECTICUT

when INCRUSTATION goes out...



...PRESSURE goes UP

There's no reason to tolerate dirty, incrusted pipe and the resulting reduced pressures, lessened capacity, high pumping costs, dirty water and possibly increased fire hazard.

Incrusted and partially clogged mains can be cleaned quickly and effectively with but little or no interruption in service. We guarantee to restore at least 95% of original capacity.

NATIONAL KNOW-HOW PAYS

National methods and equipment have been developed over a period of forty years.

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Carlos Lopez Fuentes Plaza de La Republica 55 Despacho 505 Mexico, D.F.

Bulldozers Help Milwaukee Dig Out

Paralyzed recently by the longest and worst tie-up in Milwaukee's history, business and traffic movement remained at a virtual standstill a week after a near-record snow storm hit the city. Over 18 inches of snow fell in one day, and 60-mile-an-hour winds whipped up huge drifts that locked in buildings and brought transportation to a dead stop. In some sections drifts were 10 to 15 feet deep.

Among the miscellaneous assortment of equipment put into voluntary service during the emergency were several big Heil Trailbuilders which were awaiting shipment to distributors. The city fathers called for help and The Heil Co., Milwaukee 1, Wis., sent the dozers to carve out many main thoroughfares.

Heil Trailbuilder helps dig Milwaukee, Wis., out of snow.

T. R. Camp Forms Partnership with Associates

Thomas R. Camp, consulting engineer, and his associates, Herman G. Dresser and Jack E. McKee, have formed a partnership to practice under the name of Camp, Dresser & McKee. Their offices are at 6 Beacon St., Boston 8, Mass.

The firm will undertake assignments on water and sewage treatment, municipal and industrial wastes, flood control, design and supervision of projects, research development, investigations, and reports.

E. D. Capron Joins Neptune

Edwin D. Capron has been appointed sales engineer to represent the Neptune Meter Co., New York, N. Y., in the states of Arkansas and Louisiana.

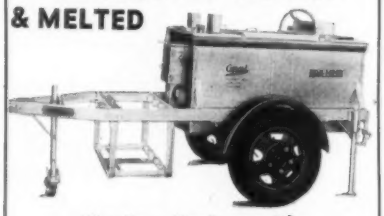
Capron received his engineering education at Oklahoma A. & M. College, after which he served as a Staff Sergeant in the Corps of Engineers.

Edwin D. Capron

RUBBERIZED ASPHALT

(FEDERAL SPECIFICATIONS SS-F-336)

CORRECTLY HEATED & MELTED



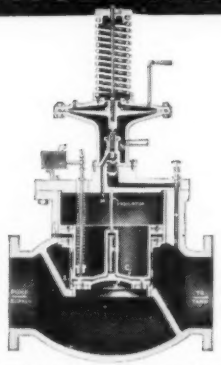
Under Automatic Thermostatic Control!

New Double-Vat indirectly heated *thermostatically controlled* Kettle meets all State and Federal Specifications for melting "rubber sealers." "No more inconvenience or loss of time than if we were using ordinary asphalt!" writes one enthusiastic user. "Poured 11,000 feet in one day," reports another who used one kettle to complete a difficult 84,000-foot contract with time to spare. Endorsed by leading compounders. Send for FREE eight page profusely illustrated Bulletin 310AC containing "on the spot" photographs, helpful suggestions, complete specifications, etc. Write TODAY.

AEROIL PRODUCTS CO.

5705 Park Avenue
West New York, New Jersey

AUTOMATIC "STOP-STARTER" GOLDEN-ANDERSON ALTITUDE VALVES



Eliminate all water surges and shock

Installed where a single line is used for both supply and discharge, the valve will maintain a constant water level within 3" to 12" variation and by means of the "stop-starter" switch stops the pump as the valve closes.

Let GOLDEN-ANDERSON Engineers, Solve your Flow Control Problems!

GA GOLDEN-ANDERSON VALVE Specialty Company PITTSBURGH 22, PA.

COMING off the LINE

Yes, the McDonald Diamond Line Stop and Drain illustrated is one of the many items getting the green light here at McDonald's. All the precise manufacturing processes—fine finishing, perfect fit, and long dependable service are incorporated into this quality item. This tee handle stop and drain, with round way and iron pipe, is also available in a stop pattern. It comes in ½, ⅝, ¾, 1, 1¼, 1½ and 2 inch sizes. It pays to specify McDonald—write for information and prices.

EST. 1886 McDonald

A. Y. McDONALD MFG. CO.
DUBUQUE, IOWA
BRASS GOODS • PUMPS • OIL EQUIPMENT

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One-quarter Century of Experience
Planimetric and topographic maps, controlled mosaics,
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AERIAL SURVEYS — OBLIQUE PHOTOGRAPHY

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Some of the rigid high-pressure streams that poured into this New York warehouse for six hours. The official story is told on page 89.